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F. Hanke, Buchhändler u. Antiquar in **Zürich**,

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Zach!

OTM

TABVLAE
SPECIALES
ABERRATIONIS
ET
NVTATIONIS
IN
ASCENSIONEM RECTAM
ET IN
DECLINATIONEM
AD SVPPVTANDAS STELLARVM FIXARVM
POSITIONES SIVE APPARENTES, SIVE VERAS
VNA CVM
INSIGNIORVM CCCCXCIV STELLARVM
ZODIACALIVM
CATALOGO NOVO
IN SPECVLA ASTRONOMICA ERNESTINA
AD INITIVM
ANNI MDCCC CONSTRVCTO, CVM ALIIS TABVLIS
EO SPECTANTIBVS

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VOL. I.

GOTHAE,
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MAGNAE BRITANNIAE REGNI SATRAPAE
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PERITISSIMO ASTRONOMIAE
JVDICI

TABVLAS HASCE ASTRONOMICAS
EJVS AVXILIO SUSCEPTAS, EXEMPLO ELABORATAS,
MVNIFICENTIA PERFECTAS
IN
OFFICII, OBSEQVII ET GRATI ANIMI SIGNIFICATIONEM
SACRAS ESSE JVBET

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PRAEFATIO.

Ecce novae tandem, plurimorum votis exoptatae, atque a nobis jamdudum promiſſae tabulae aberrationis et nutationis, quas variarum curarum pondere oppreſſi nunc demum in publicam lucem emittere poſſumus.

Enimvero cum in eo ipſo temporis articulo eſſem, ut operis hujus editionem ad exitum perducerem et ultimam admoverem manum, ab AVGVSTISSIMO BORVSSORVM REGE et a SERENISSIMO SAXONVM-GOTHANORVM DVCE moleſtiſſima, condendi mappas geographicas et dimetiendi meridiani et paralleli gradus, provincia mihi demandata fuit, in qua immanes labores, et graviſſimae tot obſervationum inſtituendarum curae opus ad finem perduci prohibebant ita, ut per triennium aſſiduis itineribus atque obſervationibus diſtractus, ſi vel maxime id laboris ſubire vellem, tum quidem omnino non poſſem.

Accedit porro illud etiam, quod tabulas ſolares meas) ad ſecundas curas et ad incudem revocaveram, et in publicatione commercii*

*) *Tabulae motuum ſolis novae et iterum correctae ex theoria gravitatis Cl. DE LA PLACE et ex obſervat. recent. in ſpecula aſtron. Erneſt. habit. erutae. Supplem. ad tab. mot. ſolis anno 1792 editas. Gothae, 1804.*

*mei literarii in aſtronomiae et geographiae incrementum *) non ſine magno laboris et temporis dispendio nullam per annos octo unquam paſſa interruptionem, continuo deſudaveram. Quo nimirum factum eſt, ut eaedem curae, quibus diſtineor, me vetarent etiam, disquiſitiones nonnullas, in hujus operis introductione ſparſas, diligentius aliquanto perpolire.*

Cum primum vero otii nonnihil ſum nactus, rem denuo aggreſſus, tabulas has in ordinem digeſſi; leges quasdam, quibus nituntur, in introductione expoſui; tabularum uſum explanavi; fontes, unde deductae ſunt, exhibui, et ſic volumen hoc primum novo examine confeci; quod mox volumen ſecundum ſecuturum eſt, ſi mihi otii quidpiam ſupererit; quod brevi ſpero ſuperfuturum.

Tanta eſt nunc coeleſtium rerum doctrinae perfectio, tanta obſervationum aſtronomicarum recentiorum perpolitio, ut exiguiſſimae etiam aſtrorum viciſſitudines minutiſſimo calculo ſubjiciantur, feliciterque definiantur. Stupendae ſunt ſubtilitates, quas de praeceſſione aequinoctiorum, de nutatione axis terrae, de luminis aberratione, ex ſecretioribus mathematum receſſibus noſtra in diem protraxit aetas. Tanta vero exinde calculorum moleſtia et prolixitas orta eſt, ut aſtronomis, qui muneris ergo in ſpeculis nocte obſervationes inſtituunt, die calculis ſubmittunt, onus plane herculeum incumbat, ſi diutinas ſive fixarum, ſive planetarum obſervationes et illarum reductiones, quae multiplices expoſcunt calculos, ſine ſuppetiis peragere coguntur.

*) *Monatliche Correſpondenz zur Beförderung der Erd- und Himmelskunde. Gotha, in der Becker'ſchen Buchhandlung.*

Ad ſublevandam tam arduam ſervitutem et tantam calculorum moleſtiam, quae pertinaciſſimum calculatorem tandem defatigare valet, magnum operae pretium remque omnibus aſtronomis gratiſſimam ſe facturos ſemper arbitrati ſunt, qui in calculatorum levamen ſubſidiarias confecerunt tabulas.

Tabulas aberrationis et nutationis inter has principem quendam locum occupare, nemo eſt, qui ignoret; et quod illarum uſus aſtronomis practicis frequentiſſimus, hujus calculi labor improbus quam ſaepiſſime ſubeundus eſt. Qua potiſſimum de cauſa vel a primo hujus theoriae exortu geometrae et aſtronomi primae notae, ut clariſſimi viri CLAIRAUT, D'ALEMBERT, EULER, DE LA CAILLE, MANFREDI, DE LA LANDE, DELAMBRE, MALLET, MASKELYNE, MEZGER, PILGRAM, ORIANI *et alii, adornandis his aſtronomorum commodo tabulis, operam dare non dedignati ſunt, quod ſane viris, quorum pars maxima vitae in computandis numeris impenditur, non potuit non eſſe exoptatum.*

Simul ut ſummus Angliae aſtronomus, Cl. BRADLEY *primus advertit, ſidera, quae aeterna lege in coelo affixa credidere hactenus aſtronomi, motu quodam lento et periodico ferri, ſitusque ſuos variare, eamque mutationem ex ſucceſſiva, cum motu annuo telluris conjuncta luminis propagatione, in connubio cum nutatione axis terreſtris a motu lunae in latitudinem ortum trahere: mox geometrae acutiſſimi in horum motuum leges inquirentes, in gratiam aſtronomorum varios hujus motus effectus tabulis comprehendere properabant; ampliſſimum vero harum apparatum primus condidit aſtronomus tum temporis facile princeps Cl.* DE LA CAILLE *in opere ſuo perraro:* Aſtronomiae

fundamenta noviſſimis ſolis et ſtellarum obſervationibus ſtabilita, Pariſiis, MDCCLVII.

*Verum cum tabularum harum uſus aliquantulum implicatus eſſet, et calculatores nonnullos in erroneas induxiſſet ſupputationes: ab earum conſuetudine complures deterruit aſtronomos. Huic tanto incommodo atque errandi periculo ut ſubveniret, tabulas has Cl. DE LA LANDE poſt tabulas planetarum HALLEII editas *) in compendium redegit, eliminatis obſcurioribus calculi operationibus.*

Verumtamen tabulae hae plurimis laborabant naevis; tum quod calculi multiplicatione et taedio non penitus obviam irent, tum quod ad recentiorum indaginem non ſatis fuiſſent accommodatae.

Procul dubio maximum horum calculorum compendium habetur, ſi pro ſingulis fixis ſingularis ſupputetur tabula, cujus ope leviſſimo breviſſimoque calculo reductiones perficiuntur. Hujusmodi tabulas peculiares pro inſignioribus fixis centum quinquaginta et ſex a Cl. aſtronomo Genevenſi MALLET ſupputatas primus edidit Cl. DE LA LANDE ſparſim in Ephemer. aſtron. ad merid. Pariſ. (Connaiſſance des tems) ab anno 1760 ad annum 1774, quae omnes a Cl. JEAURAT volumine unico anni 1781 collectae et ad epocham ejusdem anni reductae, ſed ad quindenos tantummodo argumentorum gradus diſpoſitae ſunt.

*) *Tables aſtronomiques de M. HALLEY pour les planètes et les comètes, reduites au nouveau ſtile et au méridien de Paris, par Mr. DE LA LANDE; Paris 1759.*

Anno

Anno 1774 praeclarus Angliae aſtronomus, NEVIL MASKELYNE, obſervationibus ſuis coeleſtibus quotannis editis, aliis pluribus tabulis aſtronomicis tabulas aberrationis et nutationis univerſales adjunxit, ſpeciales vero duntaxat pro inſignium triginta quatuor ſtellarum poſitionibus, ſumma cum cura et indefeſſo ſtudio ab eo ſtabilitis. *)

Anno 1776 Cl. Berolinenſis aſtronomus, LAMBERT, in collectione tabularum aſtronomicarum, ſcientiarum academiae regiae Boruſſicae auſpiciis editarum, tomo III pro nutatione novas condidit tabulas, quarum concinna conſtructionis forma et uſus accomodatior ad hunc usque diem inter aſtronomos valet.

*Anno 1778 Cl. MEZGER, Sereniſſimi Electoris Palatini aſtronomus, ſtellarum trecentarum quinquaginta duarum aberrationes et nutationes tum proprio calculo ſupputavit, tum ſupputatas ad epocham 1780 reduxit, alias a typi mendis liberavit, et Mannhemii edi curavit.***) Tabulas has Cl. DELAMBRE in Ephemer. aſtron. Pariſin. ad annum 1789 recenſuit, et a copioſiſſimis erroribus purgavit.*

Anno 1784 Cl. PILGRAM, aſtronomus Vindobonenſis, pro quingentis ſtellarum poſitionibus novas ſubduxit aberrationum et nutationum

*) *Tables for computing the apparent places of the fixt ſtars and reducing obſervations of the planets. By the rever. NEVIL MASKELYNE. London, 1774.*

**) *Tabulae aberrationis et nutationis in aſcenſ. rect. et declinat. inſignium CCCLII ſtellarum etc. digeſtae a Joanne Mezger. Mannhemii, 1778.*

tabulas ſpeciales in Ephemer. aſtron. Viennenſ. ad annum 1784 et 1785 editas; ſed ultra modum ita vitioſas, et ſphalmatibus omnigenis ſcatentes, ut illarum uſus vix, aut ne vix quidem ſuadendus.

Anno 1788 Cl. DELAMBRE non ſolum pro ducentis quinquaginta et duabus ſtellis tabulas confecit ſpeciales, in compluribus Ephemer. aſtron. Pariſin. voluminibus ſparſim editas; ſed et pro nota perſpicacitate ſua et ingenii acumine ſubtilius luminis aberrationem indagavit, atque in pertractando hoc argumento geometricam, qua mirifice pollet, rationem adeo diffudit, ut omnes aberrationis leges in arctiſſimos coegerit limites, et in compendioſiſſimas conſtrinxerit tabulas, ita ut nihil deſiderari nec concinnius nec admirabilius poſſet. Quamquam nihil per commendationem noſtram quidquam addi poſſit, non tamen poſſumus non hic publice teſtatum praemittere, quantum tabulae hae in conficiendis noſtris auxilii quantumque utilitatis praebuerint. Cl. Auctor tabulas has primum dedit in Ephemer. aſtronom. Pariſin. ad annum 1788, dein ad ampliorem uſum accomodatas tomo IX Ephemeridum Cl. DE LA LANDE *(éphémérides des mouvemens céleſtes pour le méridien de Paris, tome neuvième, contenant les huit années de 1793 à 1800; Paris, 1792.)*

Porro anno 1800 tabulae ſpeciales, numero ſatis amplo Gothae calculatae, et cum Cl. DE LA LANDE a nobis communicatae, in variis voluminibus Ephemer. aſtronom. Pariſin. paſſim editae et disjectae ſunt.

Tabulae vero hae plerumque ad temporis epochas remotiores conſtructae ſunt, non ad recentiſſimarum disquiſitionum numeros digeſtae.

Gratum igitur me facturum aſtronomis putavi, ſi tabulas ſpeciales cum aberrationis, tum nutationis, in proprium uſum ſuſceptas, pertinaci labore perfectas, recentiſſimis theoriae poſtulationibus coaequatas, a compluribus aſtronomis exoptatas, nunc publici juris facerem.

Cum ſtellarum zodiacalium in definiendis planetarum poſitionibus in aſtronomia practica perpetuus et recurrens ſit uſus, praecipuarum harum aberrationis et nutationis tabulas primo loco dare, conſultum duximus. Exhibent ergo paginae ſubſequentes motus hos peculiares in Aſcenſionem rectam et Declinationem quadringentarum nonaginta et quatuor ſtellarum inerrantium, eclipticam cingentium, ad epocham anni 1800 ſupputatos.

Exhibet quaevis plagula in fronte FLAMSTEEDII *aſterismorum numerum, nomen ſtellae, magnitudinem, atque* BAYERI *characterem. Sequuntur ſtellarum poſitiones tum in Aſcenſione recta, tum in Declinatione, ex celebratiſſimorum noſtri aevi aſtronomorum catalogis Cl.* BRADLEY, DE LA CAILLE, *et* TOB. MAYER, *quibus adjecimus aſcenſiones rectas e catalogo noſtro inſigniori excerptas, qui in tomo ſecundo, mox hunc ſecuturo, in lucem prodibit. Ubi vero deerant poſitiones, ex* FLAMSTEEDIO, DE LA LANDE, BARRY *ſuppeditatae ſunt.*

Variationum aequatiunculae, ad denos argumentorum gradus diſpoſitae, pro aberratione ſuperiorem, pro nutatione inferiorem occupant plagulae locum, adjectis undique ad calculi commodum differentiis primis.

Tabulae ad perennem uſum accommodatae, quas vocant univerſales ſeu generales, ſecundum recentiſſimas disquiſitiones Cl. DE LA PLACE in immortali ſuo opere Mécanique céleſte expolitae, ad calcem libri adjectae ſunt, ut et tabulae noviſſimae Cl. BÜRG ad nodum lunae aſcendentem depromendum, ut ne qua aliunde petenda, ſed mox omnia in promtu eſſent, quae ad convertendos aſtrorum locos apparentes in veros et viciſſim pertinerent, quod imprimis in ſupputandis remotiorum temporum et interdum veterum obſervationibus perneceſſarium eſt.

Haec erant, quae in operis limine monenda duxerom. Reliqua plura et quae ad tabularum uſum attinent, in introductione pertractata ſunt. Dabam in ſpecula aſtronomica Erneſtina, quae in monte Seeberg eſt, die ſexta Aprilis, MDCCCVI.

INTRODVCTIO.

Quinque ſunt fixarum motus apparentes, quibus fit, ut perpetuo a nobis conſpiciantur, ubi vere non ſunt.

Praeceſſio, vel potius regreſſus punctorum aequinoctialium; luminis ſucceſſiva aberratio optica; axis ſphaeroïdis terreſtris nutatio; variatio latitudinis ex diminutione obliquitatis eclipticae oriunda; motus peculiaris, quem *motum proprium* dicimus, et qui in motum totius ſyſtematis ſolaris rejicitur. En motus hos non obſervationibus tantummodo confictos, ſed ex probatiſſimis et generaliſſimis gravitatis univerſalis legibus derivatos, et argumentis validiſſimis e ſublimiori ſcientiae coeleſtis doctrina petitis ſtabilitos, qui miro atque incredibili conſenſu omnibus phaenomenis, quae inde huc usque calculo derivari potuerunt, ſatisfaciunt adeo mirifice, ut tantae tamque admirabili variationum et aberrationum tam implexarum cum coelo concordiae vix ullus perfectionis locus ſupereſſe videatur.

Quam in materia hac pertractanda ſecutus ſim rationem, hic breviter exponendum eſt. Sufficiet vero leviſſima adumbratio, cum omnem theoriam exhaurire, et intra hujus introductionis cancellos collocare, locus non patiatur, quia integrum ſatque amplum tractatum conſcribere debuiſſem, et recoquere, quae aſtronomi clariſſimi in hac re egregie et majori, quam ego potuiſſem, elegantia et amplitudine commentati ſunt. Qui ſublimioris hujus aſtronomiae adyta introſpicere cupiunt, adeant immortale illud latifundium Cl. DE LA PLACE *Mécanique céleſte*, quod opus excelſioris aſtronomiae ſtudioſis de meliori nota commendamus. Sed quibus calculi artificiis in ſingulis horum motuum inaequalitatibus definiendis ſimus uſi, quibus inhaeſerimus veſtigiis, quibus rationibus commoti, numerum hunc potius, quam alium praetulerimus, enarrandum nobis eſt, ne in

ſuſpenſo haereat *lector* de principiis, quibus tabulae noſtrae ſuperſtructae ſunt; ne in ambiguo haereat *calculator* in illarum conſuetudine. Quae itaque ad elementorum noſtrorum theoriam intelligendam requiruntur, ita accurate exponam, ut ſperem fore, ut rerum coeleſtium cultores omnia facile perſequi, de re tota judicare, calculos numericos ſine errandi periculo inſtituere, et locos fixarum ſive veros, ſive apparentes ſine impedimento computare poſſint.

Stellarum longitudines progreſſu temporis creſcere, et motu quodam communi, eclipticae parallelo, transferri, ſeu, quod eodem redit, a primo puncto arietis contra ſignorum ordinem quotannis 50" recedere videntur, adeo, ut quantus eſt fixarum motus directus in longitudine orientem verſus, tantus ſit motus retrogradus punctorum aequinoctialium occidentem verſus. Haec mutatio longitudinis dicitur *praeceſſio aequinoctiorum*, imo vero *receſſio punctorum aequinoctialium*.

De iſta communi ſtellarum progreſſione nihil ſuſpicabantur Babylonii, Aegyptii, Graeci, omnino plerique, qui tertio ante Chriſtum ſeculo floruerunt, aſtronomi. Fixas enim ſemper immobiles et non alio motu cieri, quam diurno occidentem verſus 24 horarum tempore exiſtimarunt. Quamquam enim Cl. *BAILLY* in ſua hiſtoria aſtronomiae oſtendere conatur, diu ante Hipparchum populis plerisque, qui aſtronomiam colebant, motum hunc compertum fuiſſe, atque Cicero de *ſomnio Scipionis*, Platonis ſententiam referens, et Plato ipſe in *Timaeo* ad *annum magnum* requirunt, ut *coeli octo ſuos circuitus abſolvant*; quibus verbis octavae ſphaerae motum proprium in longitudinem arguiſſe videntur: tamen nec Ariſtyllus, nec Timocharis, qui primi ſidera inſtrumentis dimetiri coeperunt, de motu hoc quidquam ſuſpicati ſunt.

Hipparchus, magnus ille Rhodius, poſt ſesquiſeculum dimenſiones has remetiens, et obſervationes ſuas cum obſervationibus Ariſtylli et Timocharidis conferens, adeo ſenſibiliter mutatas deprehendit, ut ſtellas orientem verſus moveri primus pronuntiaverit, quod, ut demonſtraret, ſcripſit tractatum de transgreſſu ſeu mutatione punctorum aequinoctialium et ſolſtitialium, temporis injuria deperditum, cujus tamen meminit Ptolemaeus in *Almageſto* lib. 3 et 7, cap. 2 et 3, ubi obſervationibus tum ſuis, tum Agrippae Menelaique confirmare ſtudet, fixas ordinatim et aequaliter moveri in conſequentia ſignorum orientem verſus ſuper eclipticae polis, et annis 100 unum gradum abſolvere. Quae quidem determinatio ſi a veritate multum abluſerit, et a recentiorum determinatione valde diverſa evaſerit, nil miran-

dum, cum ipſo Hipparcho teſte, referente Ptolemaeo, conſtet, Timocharidis craſſiores fuiſſe obſervationes, parumque explanatas. Sed conſtat nunc etiam, et Hipparchum et Ptolemaeum in inveſtigatione hujus motus ad veritatem propius acceſſuros fuiſſe, ſi duas obſervationes *Spicae Virginis*, a Timocharide inſtitutas, et ab ipſis relatas in calculum adduxiſſent, quae aequam praeceſſionis quantitatem annuam 50″ (valde diverſam a 36″, quam ex aliis obſervationibus invenerant) etiam tum exhibuiſſent.

Hanc annuam praeceſſionem ut plures ſuperiorum ſeculorum aſtronomi aliquantiſper minorem invenirent illa, quam hujus aevi aſtronomi eliciunt, hinc fortaſſe factum eſt, quod illos variationem punctorum aequinoctialium a motu eclipticae prodeuntem, omnino ignoraſſe compertum eſt.

Interea Hipparchi et Ptolemaei ſententiam omnes ad finem noni usque ſeculi ſecuti ſunt aſtronomi, quando Albategnius, Arabs, in contrarium vergens exceſſum, motum hunc aequo celeriorem, unius ſcilicet gradus intra 66 annos, eſſe contendit.

Tandem Copernicus, ad veritatem quam proxime accedens, ex collatis plurium ſeculorum obſervationibus non ſolum motum hunc unius gradus intra 72 annorum ſpatio definivit, ſed et anomalum et irregularem, obliquitatemque eclipticae mutabilem eſſe primus indicavit. Quam opinionem plures aſtronomi *Tycho*, *Kepplerus*, *Lansbergius*, *Regiomontanus* tuebantur, et obliquitatem eclipticae non ſolum imminui cenſuerunt, ſed ulterius periodum imminutionis commenti ſunt, ita, ut poſtquam obliquitas certa quantitate, quam minimam vocarunt, decreviſſet, denuo creſceret, et perveniret ad maximam. Sed cum ſententia haec obſervationibus non ita fulciretur, ut recte defendi poſſet: a plerisque aſtronomis coaevis tanquam ambigua et incerta rejecta eſt. Aliqui vero, qui mutationem obliquitatis eclipticae in dubium vocare non audebant, ut eam aliquo modo explicarent, trepidationem quamdam in punctis aequinoctialibus fingebant; quae obliquitatem modo in majorem, modo in minorem commutaret. Copernicus vero, qui motum ſtellarum nunc velocem, nunc tardum eſſe concluſit, quam inaequalitatem *anomaliae aequinoctiorum* nomine inſignivit, obliquitatis imminutionum telluris axi tribuit ita, ut ex ipſius ſententia polus aequatoris circellum deſcribat, cujus diameter maximae deviationi ſit aequalis. Hanc explicationem plane convenire cum interpretatione nutationis noſtro aevo inventae, quis non videt? Sed quantitas ejus illo tempore inſtrumenta rudiora penitus effugere debebat, ideoque fortuito adſcri-

bendum eſt caſui, ſi veteres aſtronomi in explicanda obliquitatis eclipticae anomalia in hypotheſin inciderunt, quae maximam cum explicatione nutationis noſtrae habet ſimilitudinem.

Jam licet aſtronomi ſuperiorum ſeculorum de hujus motus quantitate ſatis juſtam habuerint cognitionem: tamen veram ipſius cauſam penitus ignorabant; imo a veritate toto coelo aberrabant, cum eum octavae ſphaerae, ſeu ipſis ſtellis tribuerent.

Punctorum aequinoctialium motus, utrum motui aequatoris, an motui eclipticae adſcribendus, duplici modo decerni poſſe, jam Ptolemaeus animadvertit. Exquirendum ſcilicet putabat, utrum aſcenſiones rectae, an longitudines fixarum motu aequali ſeu uniformi ferantur, aut utrum declinationes, an latitudines immutabiles permaneant. Ad prius dijudicandum, remotiſſimas, propter lentiſſimum motum, conferre oportuiſſet obſervationes, quae ideoque a Ptolemaeo adhiberi non potuerant; ſed recentiorum obſervationibus ſatis ſuperque demonſtratum eſt, variationem in longitudine omnium fixarum ſemper aequalem, in aſcenſione recta vero valde diverſam et maximam in polorum viciniis eſſe.

In ſecundum effectum inquirentes deprehenderunt fixarum latitudines non variari*); declinationes vero aliquanto affici motu, eo majori, quo propinquiores ſtellae ſunt punctis aequinoctialibus.

Noſtris reſervatum fuit temporibus, in veras horum motuum cauſas intrare, easque ex reconditioribus virium univerſalium legibus derivare; nam patet nunc ex theoria gravitatis, ad ſummum perfectionis faſtigium perducta, motum hunc procreari ab actionibus ſolis et lunae in telluris ſphaeroïdem, quae planum aequatoris terreſtris conturbant, et continuo ſuo loco dimovent; qui quidem motus locum haberet nequaquam, ſi telluris figura ſphaerica eſſet. Praeceſſio itaque luni-ſolaris tantum e loco aequatoris terreſtris, attractionis viribus mutato, gignitur.

Tanta eſt nunc diſſimillimorum naturae phaenomenorum cum univerſalibus attractionis legibus conſonantia, ut ſaepenumero effectus, qui nec remotiſſimam inter ſe videntur habere affinitatem, arctiſſimo tamen conſtringantur nexu, atque ita ſphaeroïdicae telluris noſtrae in polis compreſſae rotatio, conjuncta cum ſolis et lunae actione in oblatam hanc terrae figuram, motum illum punctorum aequi-

*) Verum enim vero obnoxiae ſunt fixarum latitudines motui cuidam exiguiſſimo, qui ab aliena et diverſa omnino cauſa, quam a praeceſſione aequinoctiorum derivandus, ut ſuo loco ſumus oſtenſuri.

aequinoctialium producit. Ullam vero inter hunc et terrae motum diurnum conjunctionem intercedere, nullus unquam aſtronomorum conjicere potuiſſet, antequam ab illo magno et immortali *NEWTONO* attractionis leges in apricum productae fuerant.

Actio ſolis media aequinoctiorum motum producit maſſae hujus ſideris proportionalem, diviſum per cubum ejusdem diſtantiae a tellure, et ductum in coſinum obliquitatis eclipticae. Motus hic retrogradus eſt, ſi ſphaeroïdis figura in polis compreſſa eſt; velocitas vero hujus motus a compreſſionis quantitate pendet, ſed inclinationem aequatoris in eclipticam non turbat.

Cogit quoque actio lunae aequatoris terreſtris nodos ſupra planum ejus orbitae retrogredi; ſed cum poſitio hujus plani et ejusdem inclinatio in aequatorem per actionem ſolis continuo varietur; cum porro motus hic retrogradus nodorum aequatoris ſupra lunae orbitam coſinui hujus inclinationis proportionalis ſit: motus hic *variabilis* eſt.

Oriuntur itaque ex actione lunae conjuncta cum motu plani ejusdem orbitae, I) motus medius in aequinoctiorum punctis aequalis illi, quem ſidus hoc produceret, ſi in ipſo eclipticae plano verſaretur; II) motus hujus retrogradi inaequalitas ſubtractiva, et ſinui longitudinis nodi aſcendentis lunae proportionalis; III) diminutio obliquitatis eclipticae, coſinui ejusdem inclinationis proportionalis. Poſtremas has duas inaequalitates, *nutationis* nomine inſignitas, ſuo loco fuſius explicabimus, illasque cum *BRADLEJI* obſervationibus apprime conſentire demonſtrabimus.

Producit itaque unica actio lunae id, quod vocamus *nutationem axis terreſtris;* producunt ſolis et lunae actiones conjunctae, quod dicimus *aequinoctiorum praeceſſionem;* at non immunis eſt terra noſtra a caeterorum planetarum actionibus, et illi quoque ejus motum perturbant, et orbitae terreſtris poſitionem continuo immutant. Planetarum haec actio aequinoctiorum punctis motum annuum directum $= 0,''2016$ impertit. Praeceſſio ergo annua, a ſola ſolis et lunae actione producta, hac quantitate, ex planetarum actione genita, minui debet.

Quamquam Cl. *D'ALEMBERT**) magni Newtoni veſtigia premens, primus problema de praeceſſione aequinoctiorum ad generales aequationes reduxiſſet, et ſolutionem omnibus numeris abſolviſſet,

*) Recherches ſur la préceſſion des équinoxes, et ſur la nutation de l'axe de la terre, dans le ſyſtème Newtonien, par M. *d'Alembert*. Paris 1749.

tamen nec ille, nec auctores omnes, qui poſt eum arduum hoc argumentum ſcrutati ſunt, quantitatem 50" ob quorundam elementorum incertitudinem ex theoria elicere potuerunt: commonſtrarunt tantum aſſiatim, determinatam obſervationibus quantitatem a gravitatis univerſalis theoria non declinare.

E contrario Cl. *EVLERVS*, cum primus in obliquitatis eclipticae decrementum ſeculare inquireret, non potuit ex collatis veterum et recentiorum obſervationibus eam quantitatem hujus imminutionis definire, quam ex eleganti ſua theoria collegerat; ob veterum, puto, obſervationum imperfectionem, et quod variatio latitudinis per intervallum plurium ſeculorum minime idonea eſt ad inveſtigandam hanc imminutionem, cum illa non ſit tempori proportionalis.

Variata obliquitate eclipticae, longitudines fixarum quoque, et quidem duplici modo variari neceſſe eſt. Primo ex regreſſu punctorum aequinoctialium; ſecundo ex mutata inclinatione eclipticae in aequatorem. Haec poſterior pars variationis in longitudinem pro diverſis fixis diverſa eſt; prior vero omnibus communis. Quapropter ſi quantitas praeceſſionis ex comparatione veterum obſervationum cum recentiorum animadverſionibus elicienda ſit: a longitudine, noſtris temporibus obſervata, demenda, vel eidem addenda eſt quantitas illa, a variatione obliquitatis eclipticae oriunda. Subtracta dein veteri longitudine a recentiori, prodibit reſiduum, quod hanc tantum praeceſſionis partem exhibebit, quae unice ab actione ſolis et lunae in tellurem pendet. Si vero fixarum longitudines non liberentur ab hac punctorum aequinoctialium variatione, antequam inter ſe conferantur veterum et recentiorum obſervationes: ſemper prodibit quantitas mediae annuae praeceſſionis juſta minor.

Sit longitudo ſideris $= L$
latitudo $= l$
aſcenſio recta $= A$
declinatio $= D$
obliquitas eclipticae $= e$

Aſſumantur quantitates e et l conſtantes, ſint dD et dA variationes in declinatione et aſcenſione a praeceſſione aequinoctiorum in longitudine oriundae; habemus ſecundum formulas notiſſimas et rigoroſiſſimas

$$\text{ſin } \tfrac{1}{2}\, dD = \frac{\text{ſin } \frac{1}{2}\, dL \text{ ſin e coſ l coſ } (L + \frac{1}{2}\, dL)}{\text{coſ } (D + \frac{1}{2}\, dD)}$$

$$\text{et } \sin dA = \frac{2 \sin \frac{1}{2} dL \cos^2 l}{\cos D \cos(D + dD)} \times$$

$$\times [\cos e \cos \tfrac{1}{2} dL - \sin e \operatorname{tang} l \sin (L + \tfrac{1}{2} dL)]$$

et cum sufficientissima plerumque accuratione

$$dD = dL \sin e \cos (A + \tfrac{1}{2} dA)$$

$$dA = dL \cos e + dL \sin e \sin (A + \tfrac{1}{2} dA) \operatorname{tang} (D + \tfrac{1}{2} dD).$$

Sit porro praecessio annua aequinoctiorum in longitudine $= p$, numerus annorum, pro quo motus sideris quaeritur, $= n$; erit $n p = dL$, atque formulae supra traditae exhibebunt declinationum et ascensionum siderum mutationes, a praecessione aequinoctiorum provenientes.

Haec erat hactenus calculi methodus, in inquirenda praecessionis aequinoctiorum quantitate adhibita, donec Cl. *EVLERVS* ornatissimam suam tradidisset theoriam,*) et primus planetarum actiones in computum vocasset.

Quotiescunque duo corpora coelestia circa idem centrum motus, et in eandem revolvuntur directionem, sed in planis diversis: demonstratum est in physica coelesti, semper horum actiones mutuas vicissim producere motus retrogrados in utraque orbita perpetim mutata. Ad exprimendas horum motuum inaequalitates, ut eas facilius animo consequerentur, et ad expeditiorem calculi commoditatem finxerunt astronomi, planetas semper in eodem plano, seu in eadem moveri orbita, hanc vero continuo positionem suam permutare. Profecto, possunt omnes planetarum motus extra orbitae primitivae planum effingi, tribuendo huic nimirum mutationem inclinationis, et nodorum motum talem, ut in ascito hoc plano omnes exaequentur horum motuum inaequalitates. Ostendit itaque Cl. *EVLERVS* in laudata dissertatione sua, planetarum nodos retrogrados necessario ingerere mutationes in orbitarum inclinationibus, et hinc etiam variationes in siderum longitudine et latitudine.

Sit secundum clar. hunc auctorem ☊ longitudo nodi descendentis orbitae planetaris in ecliptica, quae hic stabilis et permanens assumitur; longitudo haec aequat longitudinem nodi ascendentis ecliptica in planetae orbita. $\alpha =$ inclinationi orbitae planetaris in ecliptica. $\varepsilon =$ intervallo, quo ecliptica nodi supra planum planetae orbitae dato tempore v. g. uno seculo retrogrediuntur. Hoc temporis intervallum ex theoria statuendum est.

*) Mém. de l'Acad. Royale de Berlin, Tom. IX Année 1754, pag. 296.

Erit tunc

I) Variatio ſecularis obliquitatis eclipticae =

$$\varepsilon \sin \alpha \sin \Omega$$

Signum + incrementum, ſignum — vero decrementum obliquitatis eclipticae denotat.

II) Incrementum ſeculare diſtantiae ſideris a polo boreo eclipticae

$$\varepsilon \sin \alpha \cos (L - \Omega)$$

Latitudo borealis ſideris itaque creſcit, ſi formula poſitivum exhibet valorem; minuitur vero, ſi valor hic negativus eſt; pro latitudine auſtrali contraria praecepta habent locum.

III) Longitudo ſideris unius ſeculi ſpatio decreſcit

$$\varepsilon \sin \alpha \sin (L - \Omega) \operatorname{tang} \tfrac{1}{2}$$

ubi notandum, tangentem latitudinis pro ſideribus auſtralibus negativam evadere.

IV) Inaequalitas praeceſſionis, quae eſt diminutio ſecularis longitudinis ſideris

$$\varepsilon \sin \alpha \operatorname{cotang} \varepsilon \cos \Omega$$

eadem etiam quantitate (praeter conſuetam praeceſſionem) motus punctorum aequinoctialium augetur.

Quantitatem ε invenit Cl. *EVLERVS* ab actione Jovis provenientem = 18", ab actione Veneris = 32", et hinc decrementum ſeculare obliquitatis eclipticae = 47,"5, decrementum ſeculare praceſſionis = 14", incrementum ſeculare latitudinis

$$+ 47,"5 \sin L + 6,"5 \cos L$$

quod etiam ſic exprimi poterit

$$+ 48" \sin (L + 8°)$$

Tandem diminutio ſecularis longitudinis ſideris

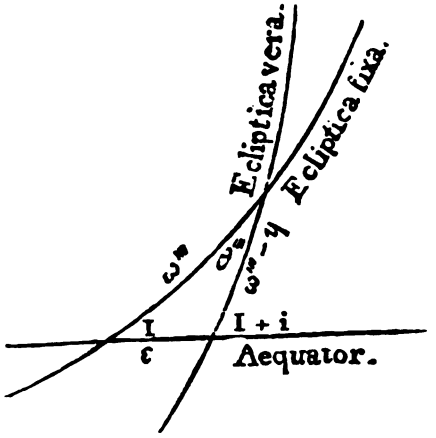
$$(48" \cos L - 6" \sin L) \operatorname{tang} \tfrac{1}{2} = 48" \cos (L + 8°) \operatorname{tang} \tfrac{1}{2}$$

Si latitudo auſtralis, tang $\frac{1}{2}$ negativa ſumenda eſt.

Huic theoriae inhaerens Cl. *MASKELYNE* easdem tabulas, a Cl. *EVLERO* pag. 329 et 339 in diſſertatione ſua traditas, iterum

excudi curavit in collectione tabularum ſuarum*) quales ſunt tabulae XLIV et tabula XLV hujus collectionis.

Poſt Cl. *EVLERVM* Cl. DE LA *GRANGE* argumentum hoc ſubtiliſſimae indaginis conſueta ſua perſpicacitate et elegantia rimatus eſt. **)



Sint ſecundum eximii hujus geometrae theoriam J et θ''' anguli lateri ω''' adjacentes; erit

I) $\cos(J+i) = \cos J \cos\theta''' - \sin J \sin\theta''' \cos\omega'''$

et cum quantitates i et θ''' perexiguae ſint, poterit $\cos i$ et $\cos\theta''' = 1$, et loco angulorum ſinus ejusdem arcus aſſumi. Proinde

$-i \sin J = -\sin J\,\theta''' \cos\omega'''$
vel $i = \theta''' \cos\omega'''$.

II) Habemus porro

$$\frac{\sin\omega'''}{\sin(J+i)} = \frac{\sin s}{\sin\theta'''}$$

loco $\sin s$ poteſt arcus s poni, erit igitur

$$\frac{\sin\omega'''}{\sin J + i\cos J} = \frac{s}{\theta'''} = \frac{\sin\omega'''}{\sin J} \text{ unde}$$

$$s = \frac{\theta''' \sin\omega'''}{\sin J}$$

III) Atque inſuper eſt

$$\frac{\sin(\omega''' - \eta)}{\sin J} = \frac{\sin\omega'''}{\sin(J+i)} \text{ vel}$$

$$\sin\omega''' = \sin(\omega''' - \eta)\sin\frac{(J+i)}{\sin J} \text{ id eſt}$$

$$(\sin\omega''' - \eta\cos\omega''')\,(1 + i\,\text{cotang}\,J) = \sin\omega'''$$

*) Tables for computing the apparent places of the fixt ſtars, and reducing obſervations of the planets. By the rever. *NEVIL MASKELYNE*, B. D. London, 1774.

**) Théorie des variations ſéculaires des élemens des planètes. Mém. de l'Acad. Royale des Sciences de Berlin. 1782.

et omiſſis productis i et η

$$-\eta \operatorname{cof} \omega''' + i \operatorname{ſin} \omega''' \operatorname{cotang} J = o \text{ unde}$$

$$\eta = i \operatorname{cotang} J \operatorname{tang} \omega'''$$

IV) Subſtituendo loco i ejus valorem β''' cof ω''', habemus denique

$$\eta = \theta''' \operatorname{ſin} \omega''' \operatorname{cotang} J$$

Ex figura patet, i incrementum eclipticae, s motum punctorum aequinoctialium in aſcenſione recta, η eundem hunc motum in longitudine denotare. Sint porro L longitudo, l latitudo borealis ſideris ad eclipticam anni 1700 relatae; tunc quam proxime erit

Imminutio latitudinis $= \theta''' \operatorname{ſin} (L - \omega''')$

Incrementum longitudinis $= \theta''' \operatorname{cof} (L - \omega''') \operatorname{tang} \lambda - \eta$

Ideoque incrementum latitudinis borealis poterit per hanc formulam exprimi

$$\eta \operatorname{tang} J \operatorname{cof} L - i \operatorname{ſin} L$$

et incrementum longitudinis

$$i \operatorname{cof} L \operatorname{tang} \lambda - \eta (1 - \operatorname{tang} J \operatorname{ſin} L \operatorname{tang} \lambda)$$

vel ſi ponatur

$$s''' = \theta''' \operatorname{ſin} \omega''' \text{ et } u''' = \theta''' \operatorname{cof} \omega'''; \text{ erit}$$

Incrementum latitudinis $= s''' \operatorname{cof} L - u''' \operatorname{ſin} L$

Incrementum longitudinis $= u''' (\operatorname{cof} L + s''' \operatorname{ſin} L) \operatorname{tang} \lambda - \eta$

Cum vero hic ſupponatur, longitudines a puncto fixo eclipticae fixae numerari: propter praeceſſionem quaevis longitudo quantitate 50,"33 t augenda eſt, ubi t numerum annorum ab anno 1700 elapſorum denotat: qua propter $\omega''' + 50,"33\,t$ loco ω''' ponendum eſt, quo fit, ut ſubſtituto hoc valore mutentur

$$s''' \text{ in } s''' \operatorname{cof} (50,"33\,t) + u''' \operatorname{ſin} (50,"33\,t)$$

$$u''' \text{ in } u''' \operatorname{cof} (50,"33\,t) - s''' \operatorname{ſin} (50,"33\,t)$$

Formulas has propius intuenti patebit illico, easdem fere eſſe Cl. *EVLERI*, ſupra traditas. Unicum, quod intercedit, diſcrimen in eo conſiſtit, quod Cl. *EVLERVS* in formula ſua pro incremento longitudinis partem variabilem η omnibus fixis communem prout peculiarem praeceſſionis inaequalitatem pertractat. Qui modus etiam apud aſtronomos practicos uſu invaluit; Cl. DE LA *GRANGE* vero ambas formulae partes in unam conflavit expreſſionem.

Invenit nunc Cl. DE LA *GRANGE* (l. c. p. 283)

tang inclin. × sin long. ☊☾ = [S‴] = 0,″02905 sin l + 0,″00363 sin m — — 0,″0329 sin n — 0,″00146 sin p — 0,″00683 sin q + 0,″02012 sin r

Quantitas haec divisa per tang. obliquitatis eclipticae ad annum 1700 exhibet motum punctorum aequinoctialium in longitudine.

Porro

u‴ = tang inclin. × cos long. ☊☾ = — 0,″02905 cos l — 0,″00363 cos m — 0,″0329 cos n + 0,″00146 cos p — 0,″00683 cos q + 0,″02012 cos r

quae quantitas variationem obliquitatis eclipticae exprimit.

In formularum harum aestimatione numerica praecessio annua 50,″054 summa cum cura a nobis elicita (quam quomodo assecuti simus, infra fusius enarrabimus) suggesta est; quae igitur in calculos hos adhibita sequentes procreavit valores:

l	=	76°	21′	20″	— 50,″054 t
m	=	54	44	20	— 24, 4784 t
n	=	77	43	0	+ 29, 2160 t
p	=	41	34	10	— 32, 5388 t
q	=	56	31	50	+ 42, 3739 t
r	=	22	14	20	+ 44, 9141 t

ubi t denotat numerum annorum ab anno 1700 elapsorum; qui igitur ante epocham anni 1700 negativus evadit. Jam etiamsi aequationes inclinationem et nodum non exhibeant immediate, tamen perfacile inde possunt derivari: extrahenda tantummodo est radix quadrata ex summa quadratorum aequinoctiorum, ut obtineatur tangens inclinationis; et quotiens ambarum aequationum exhibebit tangentem nodi.

Sequentes igitur Cl. DE LA *GRANGE* (l. c. p. 287) deduxit formulas, quae ad praecessionem nostram nuper inventam accommodatae pro diminutione obliquitatis eclipticae hanc nobis praebuerunt expressionem:

+	1414″	cos (50,″054 t)	+	5823″	sin (50,″054 t)
+	432	cos (24, 4784 t)	+	611	sin (24, 4784 t)
+	1444	cos (29, 2160 t)	—	6631	sin (29, 2160 t)
—	225	cos (32, 5388 t)	—	200	sin (32, 5388 t)
+	776	cos (42, 3739 t)	—	1174	sin (42, 3739 t)
—	3841	cos (44, 9141 t)	+	1571	sin (44, 9141 t)

et pro motu punctorum aequinoctialium in longitudine partem variabilem (ſepoſita parte conſtante 50,"054t)

+ 13404"	coſ (50,"054 t)	—	3253"	ſin (50,"054 t)
+ 1407	coſ (24, 4784 t)	—	995	ſin (24, 4784 t)
— 15263	coſ (29, 2160 t)	—	3324	ſin (29, 2160 t)
— 460	coſ (32, 5388 t)	+	518	ſin (32, 5388 t)
— 2703	coſ (42, 3739 t)	—	1787	ſin (42, 3739 t)
+ 3615	coſ (44, 9141 t)	+	8841	ſin (44, 9141 t)

Ponatur itaque $t = 1$, obtinemus annuam diminutionem obliquitatis eclipticae $= 0,"6156$ et motum annuum punctorum aequinoctialium $= 0,"261$. Utraque quantitas ab obſervationibus recentioribus plus aequo declinare videtur.

Habemus denique, ad mentem Cl. DE LA *GRANGE* (N. 19) uno ſub conſpectu

I) Incrementum latitudinis borealis

(motus punct. aequin. × coſ long. × tang obl. eclipt.) +
+ diminut. obl. eclipt. × ſin long.

II) Decrementum longitudinis

mot. punct. aequin. × (1 — ſin long. × tang latit × tang obl. eclipt.) +
+ diminut. obl. eclipt. × coſ long. × tang latit.

(adhibita obliquitate eclipticae pro epocha 1700)

Utraque formula Cl. DE LA *GRANGE* tum pro diminutione obliquitatis eclipticae, tum pro motu praeceſſionis punctorum aequinoctialium, ex duodecim conſtat membris, et ob Urani actionem adhuc duobus augeri deberet. Recte igitur monet Cl. DE LA *PLACE*, formulas has ad uſum non admodum commodas eſſe; approximationem vero penitus ſufficere, donec planetarum maſſae clarius innotuerint. Hanc autem approximationem ſequenti aſſecutus eſt modo *).

Ponit nimirum, quantitates Cl. DE LA *GRANGE* s''' et u''' per ſequentes determinari poſſe formulas:

$$s''' = A' \text{ ſin } gt + B' (1 - \text{coſ } g't)$$
$$u''' = B' \text{ ſin } gt - A' (1 - \text{coſ } gt)$$

Si pro duobus valoribus pro t aſſumtis eliciantur quantitates s''' et u''', caeterae quoque quantitates A', B' g et g' innoteſcent. Supputavit

*) Mém. de l'Acad. Royale des Sciences de Paris, 1789, pag. 6.

putavit itaque quantitates has s''' et u''' Cl. DE LA *PLACE*, ex Cl. DE LA *GRANGE* formulis rigorosissimis posito $t = 0$, dein $t = 1000$.

Planetarum vero massas ita castigatas adhibuit, ut diminutio obliquitatis eclipticae 50", (non sicut Cl. DE LA *GRANGE* invenerat 61,"56) evaderet. His positis invenit incrementum obliquitatis eclipticae

$$- 3140,''34 \sin (32,''8412)\, t - 932,''56\, [1^{*)} - \cos (17,''7686\, t)]$$

motum punctorum aequinoctialium in longitudine

$$50,''53353\, t - 3292,''28 \sin (17,''7686\, t) + 9315,''65\, [1 - \cos (32,''8412\, t)]$$

Substituendo nunc praecessionem nostram annuam 50,"054 formulae hae mutantur in sequentes

$$- 3140,''34 \sin (32,''6452\, t) - 932,''56\, [1 - \cos (17,''5726\, t)]$$

et pro motu punctorum aequinoctialium in longitudine

$$50,''33321\, t - 3292,''28 \sin (17,''5726\, t) + 9315,''65\, [1 - \cos (32,''6452\, t)]$$

Est porro diminutio secularis obliquitatis eclipticae $= 52,''0$, prout illam in tabulis nostris solaribus nuper editis**) p. 14) repetito calculo invenimus. Atque diminutio secularis praecessionis aequinoctiorum secundum Cl. DE LA *PLACE* $= 8,''0333$ ***). Jam liquet ex praemissa alterius theoria, praecessionem, ex observationibus elicitam, non esse illam, quae ex actionibus solis et lunae in aequatorem terrestrem consequeretur; involvit nimirum haec quantitas planetarum perturbationes, quorum conjunctae actiones hoc seculo motum annuum directum punctorum aequinoctialium super eclipticam $= 0,''185055$ et super aequatorem $= 0,''20174$ producunt. Cum itaque praecessio nostra ex observationibus deprompta sit 50,"054: praecessio vera lunisolaris erit pro nostro seculo $50,''054 + 0,''18506 = 50,''23906$. Hi motus cum pro diversis seculis sint diversi: subnectimus hic elenchum, motus hos, a planetarum actione productos, ad varia ante et retro secula exhibentem.

*) Omissa est haec constans in dissertatione Cl. DE LA PLACE, pag. 16 typi vel calculi errore; quam profecto adhibendam esse, nullum restat dubium. Nam, ponatur $t = 0$; ipsa formula in nihilum redire debet, quod minime fit, si omissa constans 1 non adhibetur.

**) Tabulae motuum solis novae et iterum correctae etc. Gothae, 1804.

***) Mém. de l'Acad. Royale des Sciences de Paris; 1798, pag. 16.

Anni	Remotio aequatoris	Remotio eclipticae
Ante C. N.		
500	0,"18224	0,"19916
0	0, 18283	0, 19969
Poſt C. N.		
500	0, 18342	0, 20024
1000	0, 18404	0, 20081
1500	0, 18467	0, 20139
1600	0, 18480	0, 20150
1700	0, 18492	0, 20162
1800	0, 18506	0, 20174
1900	0, 18519	0, 20186
2000	0, 18531	0, 20197

Praeterea hic ſubjungimus varios praeceſſionis motus in longitudine, per formulas ſupra traditas ſupputatos, quorum uſus apud aſtronomos practicos crebro occurrit, et qui in ſequentibus dispoſiti ſunt tabulis:

Anni	Summa Praeceſſionum ab anno 1700			Praeceſſio ſecularis		
anteC N.	°	′	″	°	′	″
300	27	40	24,553	I	22	39,835
200	26	17	44,718	I	22	42,024
100	24	55	2,694	I	22	44,214
0	23	32	18,470			
poſt C. N				I	22	46,450
100	22	9	32,020	I	22	48,672
200	20	46	43,348	I	22	50,912
300	19	23	52,436	I	22	53,153
400	18	0	59,283	I	22	55,409
500	16	38	3,874	I	22	57,681
600	15	15	6,193	I	22	59,959
700	13	52	6,234	I	23	2,239
800	12	29	3,995	I	23	4,531
900	11	5	59,464	I	23	6,829
1000	9	42	52,635	I	23	9,136
1100	8	19	43,499	I	23	11,438
1200	6	56	32,061	I	23	13,775
1300	5	33	18,286	I	23	16,079
1400	4	10	2,207	I	23	18,409
1500	2	46	43,798	I	23	20,732
1600	1	23	23,066	I	23	23,066
1700	0	0	0,000	I	23	25,400
1800	1	23	25,400	I	23	28,738
1900	2	46	53,138	I	23	30,069
2000	4	10	23,207			

Anni	Praeceſſio univerſa in longit.			Praeceſſio luni-ſolaris in longit.			Eclipticae amotio.
	°	′	″	°	′	″	″
1	0	0	50,054	0	0	50,239	0,20174
2	0	1	40,108	0	1	40,478	0,40348
3	0	2	30,162	0	2	30,717	0,60522
4	0	3	20,216	0	3	20,956	0,80696
5	0	4	10,270	0	4	11,195	1,00870
6	0	5	0,324	0	5	1,434	1,21044
7	0	5	50,378	0	5	51,673	1,41218
8	0	6	40,432	0	6	41,912	1,61392
9	0	7	30,486	0	7	32,152	1,81566
10	0	8	20,540	0	8	22,391	2,01740
11	0	9	10,594	0	9	12,630	2,21914
12	0	10	0,648	0	10	2,869	2,42088
13	0	10	50,702	0	10	53,108	2,62262
14	0	11	40,756	0	11	43,347	2,82436
15	0	12	30,810	0	12	33,586	3,02610
16	0	13	20,864	0	13	23,825	3,22784
17	0	14	10,918	0	14	14,064	3,42958
18	0	15	0,972	0	15	4,303	3,63132
19	0	15	51,026	0	15	54,542	3,83306
20	0	16	41,080	0	16	44,781	4,03480
30	0	25	1,620	0	25	7,172	6,05220
40	0	33	22,160	0	33	29,562	8,06960
50	0	41	42,700	0	41	51,953	10,08700
60	0	50	3,240	0	50	14,344	12,10440
70	0	58	23,780	0	58	36,734	14,12180
80	1	6	44,320	1	6	59,125	16,13920
90	1	15	4,860	1	15	21,515	18,15660
100	1	23	25,400	1	23	43,906	20,17400

Praeceſſio annua pro ſeculo praeſenti ad denos dies diſtributa		
Jan.	10	1,"371
	20	2, 742
	30	4, 114
Febr.	9	5, 485
	19	6, 856
Mart.	1	8, 228
	11	9, 599
	21	10, 970
	31	12, 342
April.	10	13, 713
	20	15, 084
	30	16, 455
Maj.	10	17, 827
	20	19, 198
	30	20, 569
Jun.	9	21, 941
	19	23, 312
	29	24, 683
Jul.	9	26, 054
	19	27, 426
	29	28, 797
Aug.	8	30, 168
	18	31, 540
	28	32, 911
Septbr.	7	34, 282
	17	35, 654
	27	37, 025
Octob.	7	38, 396
	17	39, 768
	27	41, 139
Novbr.	6	42, 510
	16	43, 881
	26	45, 253
Decbr.	6	46, 624
	16	47, 996
	26	49, 368
	31	50, 054

Exhibent itaque tabulae hae ſummas praeceſſionum punctorum aequinoctialium in longitudine ab epocha anni 1700 numeratas, atque ab anno 0 ad annum 300 ante C. N. et 2000 poſt C. N. productas. Differentiae juxta poſitae includunt praeceſſionem ſecularem, cuivis ſeculo convenientem.

Tabula altera ſubminiſtrat praeceſſionem totalem, pro ſingulis annis ad integrum ſeculum usque ordinatam, quae ad reducendas fixarum longitudines et ad convertendos planetarum motus tropicos in motus ſidereos, et viciſſim inſervit. Suppeditat inſuper praeceſſionem luni-ſolarem, et eclipticae motum ex ſola planetarum actione genitum; quae ambo tunc prodeſſe poſſunt, ſi ex praeceſſione in longitudinem variationes in aſcenſione recta, et in declinatione, ſecundum formulas rigoroſiſſimas definire lubet. Adjecta eſt commoditatis gratia praeceſſio media diurna, ad denos anni dies diſtributa.

Nunc denique, his praemiſſis, poſſumus motus ſeculares in latitudine et in longitudine definire, et in numericos convertere valores. Erit igitur incrementum ſeculare latitudinis borealis:

$$+ 8,"0333 \text{ cof long.}* + 52,"00 \text{ ſin long.}*$$

et cum ſit $\frac{8,"0333}{52,"00} = \text{tang } 8^\circ\ 53'\ 13"$, et

$52,"0 \text{ ſec } 8^\circ\ 53'\ 13" = 52,"6318$, erit incrementum hoc

$$+ 52,"6318 \text{ ſin (long.}* + 8^\circ\ 53'\ 13").$$

Porro decrementum ſeculare longitudinis (ſepoſita parte conſtanti praeceſſionis) erit

$$[- 8,"0333 \text{ ſin long.}* + 52,"00 \text{ cof long.}*] \text{ tang latit.}*$$

et eadem, qua ſupra, transformatione

$$52,"6318 \text{ cof. (long.}* + 8^\circ\ 53'\ 13") \text{ tang latit.}*$$

Variationes latitudinum nullo negotio in unica poſſunt reponi tabula; poterit illa quoque ad inveniendas variationes in longitudine

inſervire, ſi prius argumentum long. * tribus mulctaveris ſignis ; vel poteris etiam ad Cl. *EVLERI* exemplum eandem tabulam ordine inverſo disponere. Sed in utroque caſu quantitates, e tabula depromptae, ſemper per tang. latit. * multiplicandae ſunt. Ad ſublevandam hanc operam poteris valde opportune angulum quemdam, quem vocamus *auxiliarem*, uſurpare, et hoc artificio calculum multo brevius abſolvere.

Ponamus nimirum tang. latit. * $=$ 10 coſ α; formula noſtra in hanc abit

$$\begin{aligned} &10\ (52,''6318\ \text{coſ}\ (\text{long.}* + 8^\circ\ 53'\ 13'')\ \text{coſ}\ \alpha \\ &5\ (52,''6318\ \text{coſ}\ (\text{long.}* + 8^\circ\ 53'\ 13'' + \alpha) \\ &+ 5\ (52,''6318\ \text{coſ}\ (\text{long.}* + 8^\circ\ 53'\ 13'' - \alpha) \end{aligned}$$

Si itaque angulus α in ſubſidium vocatur, (cum praeterea tabula haec ſic disponatur, ut a ſolo argumento long. * dependeat), bis uſurpari poterit, ſcilicet cum argumento (long. * $+ \alpha$) et cum argumento (long. * $- \alpha$). Sed cum in latitudinibus majoribus tang. latitud. $>$ 10 coſ α: propterea coſ α unitate major evaderet, quod impoſſibilitatem involvit. Ad illam eliminandam, et ad expeditiorem multiplicationem a 75 latitudinis gradu aſſumſimus angulum ſubſidiarium β ita, ut tang latit. $=$ 100 coſ β. Quotiescunque ergo hic adhibetur angulus, quantitates (long.* $+\beta$) et (long.* $-\beta$) excerptae, et in unum aggregatum conflatae, per 100 multiplicandae veniunt. Sequuntur jam tabulae hae generales, quae fixarum variationes ſeculares cum in latitudine, tum in longitudine exhibent, adjectis tabulis duabus, quae angulos α et β in ſubſidium calculi variationis in longitudine continent.

Angulus α

in ſubſidium calculi variationis ſecularis in longitudine.

Tangens latitudinis = 10 cosin. α

Arg. latit.	Angulus α + II^s	Diff.	Arg. latit.	Angulus α + II^s	Diff.	Arg. latitud.	Angulus α + II^s	Diff.
0°	0° 0′ 0	6′ 0	30°	26° 41′ 4	8′ 1	60° 0′	20° 1′ 5	12′ 3
1	29 54 0	6 0	31	26 33 3	8 3	60 30	19 49 2	12 8
2	29 48 0	6 0	32	26 25 0	8 4	61 0	19 36 4	13 2
3	29 42 0	6 0	33	26 16 6	8 6	61 30	19 23 2	13 6
4	29 36 0	6 1	34	26 8 0	8 9	62 0	19 9 6	14 1
5	29 29 9	6 0	35	25 59 1	9 1	62 30	18 55 5	14 6
6	29 23 9	6 1	36	25 50 0	9 3	63 0	18 40 9	15 1
7	29 17 8	6 1	37	25 40 7	9 6	63 30	18 25 8	15 7
8	29 11 7	6 1	38	25 31 1	9 8	64 0	18 10 1	16 2
9	29 5 6	6 2	39	25 21 3	10 1	64 30	17 53 9	16 9
10	28 59 4	6 2	40	25 11 2	10 4	65 0	17 37 0	17 5
11	28 53 2	6 3	41	25 0 8	10 8	65 30	17 19 5	18 3
12	28 46 9	6 3	42	24 50 0	11 0	66 0	17 1 2	19 0
13	28 40 6	6 3	43	24 39 0	11 5	66 30	16 42 2	19 8
14	28 34 3	6 4	44	24 27 5	11 9	67 0	16 22 4	20 6
15	28 27 9	6 5	45	24 15 6	12 3	67 30	16 1 8	21 6
16	28 21 4	6 6	46	24 3 3	12 7	68 0	15 40 2	22 6
17	28 14 8	6 6	47	23 50 6	13 2	68 30	15 17 6	23 6
18	28 8 2	6 7	48	23 37 4	13 7	69 0	14 54 0	24 8
19	28 1 5	6 7	49	23 23 7	14 3	69 30	14 29 2	26 0
20	27 54 8	6 8	50	23 9 4	15 0	70 0	14 3 2	27 3
21	27 48 0	6 9	51	22 54 4	15 6	70 30	13 35 9	28 9
22	27 41 1	7 0	52	22 38 8	16 3	71 0	13 7 0	30 4
23	27 34 1	7 2	53	22 22 5	17 1	71 30	12 36 6	32 1
24	27 26 9	7 3	54	22 5 4	18 0	72 0	12 4 5	34 0
25	27 19 6	7 4	55	21 47 4	19 0	72 30	11 30 5	36 0
26	27 12 2	7 5	56	21 28 4	19 9	73 0	10 54 5	38 3
27	27 4 7	7 6	57	21 8 5	21 1	73 30	10 16 2	40 8
28	26 57 1	7 8	58	20 47 4	22 3	74 0	9 35 4	43 5
29	26 49 3	7 9	59	20 25 1	23 6	74 30	8 51 9	46 7
30	26 41 4		60	20 1 5		75 0	8 5 2	

Angulus β

in ſubſidium calculi variationis ſecularis in longitudine.

Tangens latitudinis = 100 cosin. β

Arg. latit.	Angulus β + II^s	Diff.	Arg. latit.	Angulus β + II^s	Diff.	Arg. latit.	Angulus β + I^s	Diff.
° ′	° ′	′	° ′	° ′	′	° ′	° ′	′
75 0	27 51, 7	4, 6	86 10	21 25, 0	23, 6	88 55	28 4, 4	181, 5
75 30	27 47, 1	5, 0	86 20	21 1, 4	26, 0	89 0	25 2, 9	40, 9
76 0	27 42, 1	5, 4	86 30	20 35, 4	13, 9	89 1	24 22, 0	42, 8
76 30	27 36, 7	5, 7	86 35	20 21, 5	14, 7	89 2	23 39, 2	44, 5
77 0	27 31, 0	6, 2	86 40	20 6, 8	15, 3	89 3	22 54, 7	46, 7
77 30	27 24, 8	6, 6	86 45	19 51, 5	16, 3	89 4	22 8, 0	48, 9
78 0	27 18, 2	7, 2	86 50	19 35, 2	17, 1	89 5	21 19, 1	51, 3
78 30	27 11, 0	7, 9	86 55	19 18, 1	18, 1	89 6	20 27, 8	53, 9
79 0	27 3, 1	8, 7	87 0	19 0, 0	19, 2	89 7	19 33, 9	56, 7
79 30	26 54, 4	9, 5	87 5	18 40, 8	20, 2	89 8	18 37, 2	59, 9
80 0	26 44, 9	10, 5	87 10	18 20, 6	21, 6	89 9	17 37, 3	63, 3
80 30	26 34, 4	11, 6	87 15	17 59, 0	22, 9	89 10	16 34, 0	67, 0
81 0	26 22, 8	13, 0	87 20	17 36, 1	24, 4	89 11	15 27, 0	71, 2
81 30	26 9, 8	14, 6	87 25	17 11, 7	26, 1	89 12	14 15, 8	76, 0
82 0	25 55, 2	16, 6	87 30	17 45, 6	27, 9	89 13	12 59, 8	81, 2
82 30	25 38, 6	18, 9	87 35	16 17, 7	30, 1	89 14	11 38, 6	87, 1
83 0	25 19, 7	21, 8	87 40	15 47, 6	32, 3	89 15	10 11, 5	94, 1
83 30	24 57, 9	25, 4	87 45	15 15, 3	34, 9	89 16	8 37, 4	102, 0
84 0	24 32, 5	9, 5	87 50	14 40, 4	37, 7	89 17	6 55, 4	111, 3
84 10	24 23, 0	10, 0	87 55	14 2, 7	41, 1	89 18	5 4, 1	122, 6
84 20	24 13, 0	10, 7	88 0	13 21, 6	44, 8	89 19	3 1, 5	136, 5
84 30	24 2, 3	11, 3	88 5	12 36, 8	49, 1	89 20	0 45, 0	154, 0
84 40	23 51, 0	11, 9	88 10	11 47, 7	54, 1	89 21	28 11, 0	177, 5
84 50	23 39, 1	12, 9	88 15	10 53, 6	59, 7	89 22	25 13, 5	211, 0
85 0	23 26, 2	13, 7	88 20	9 53, 9	66, 4	89 23	21 42, 5	266, 0
85 10	23 12, 5	14, 7	88 25	8 47, 5	74, 5	89 24	17 16, 5	386, 0
85 20	22 57, 8	15, 8	88 30	7 33, 0	84, 0	89 25	10 50, 0	650, 0
85 30	22 42, 0	17, 0	88 35	6 9, 0	95, 7	89 26	0 0, 0	
85 40	22 25, 0	18, 4	88 40	4 33, 3	109, 9			
85 50	22 6, 6	19, 9	88 45	2 43, 4	127, 9			
86 0	21 46, 7		88 50	0 35, 5				

Variatio ſecularis latitudinis borealis fixarum.

Argumentum: Longitudo fixae.

Si latitudo auſtralis, mutantur ſigna.

Grad.	O^s +	I^s +	II^s +	III^s +	IV^s +	V^s ±	Grad.
0	8,"130	33,"041	49,"098	52,"000	40,"968	18,"959	0
1	9, 036	33, 751	49, 421	51, 850	40, 386	18, 100	1
2	9, 940	34, 450	49, 730	51, 685	39, 790	17, 235	2
3	10, 840	35, 139	50, 024	51, 503	39, 183	16, 364	3
4	11, 738	35, 818	50, 302	51, 306	38, 564	15, 488	4
5	12, 631	36, 486	50, 564	51, 093	37, 933	14, 608	5
6	13, 521	37, 142	50, 812	50, 865	37, 290	13, 723	6
7	14, 407	37, 787	51, 043	50, 622	36, 636	12, 834	7
8	15, 288	38, 421	51, 259	50, 363	35, 971	11, 941	8
9	16, 165	39, 043	51, 460	50, 088	35, 295	11, 045	9
10	17, 036	39, 653	51, 645	49, 798	34, 608	10, 144	10
11	17, 903	40, 251	51, 814	49, 493	33, 911	9, 242	11
12	18, 764	40, 837	51, 968	49, 173	33, 204	8, 337	12
13	19, 619	41, 410	52, 105	48, 838	32, 486	7, 429	13
14	20, 468	41, 971	52, 227	48, 489	31, 758	6, 518	14
15	21, 311	42, 519	52, 333	48, 124	31, 021	5, 605	15
16	22, 148	43, 053	52, 423	47, 745	30, 274	4, 691	16
17	22, 978	43, 574	52, 496	47, 351	29, 518	3, 776	17
18	23, 801	44, 083	52, 554	46, 943	28, 753	2, 859	18
19	24, 617	44, 578	52, 596	46, 520	27, 979	1, 941	19
20	25, 424	45, 060	52, 622	46, 083	27, 197	1, 023	20
21	26, 225	45, 528	52, 632	45, 633	26, 406	0, 105	21
22	27, 017	45, 982	52, 626	45, 169	25, 608	0, 814	22
23	27, 801	46, 422	52, 603	44, 690	24, 802	1, 732	23
24	28, 576	46, 847	52, 565	44, 198	23, 988	2, 650	24
25	29, 344	47, 259	52, 511	43, 692	23, 166	3, 567	25
26	30, 103	47, 657	52, 441	43, 173	22, 338	4, 483	26
27	30, 852	48, 039	52, 354	42, 641	21, 503	5, 398	27
28	31, 591	48, 407	52, 252	42, 097	20, 661	6, 311	28
29	32, 321	48, 760	52, 134	41, 539	19, 813	7, 221	29
30	33, 041	49, 098	52, 000	40, 968	18, 959	8, 130	30
Grad.	— VI^s	— VII^s	— VIII^s	— IX^s	— X^s	∓ XI^s	Grad.

Variatio ſecularis longitudinis fixarum.

Argumentum: $\left(\text{long.} * \begin{matrix} + \alpha \\ + \beta \end{matrix}\right)$ et $\left(\text{long.} * \begin{matrix} - \alpha \\ - \beta \end{matrix}\right)$

Si declinatio auſtralis, mutantur ſigna.

Grad.	O^s —	I^s —	II^s ∓	III^s +	IV^s +	V^s +	Grad.
0	260,″00	204,″84	94,″80	40,″65	165,″20	245,″49	0
1	259, 25	201, 92	90, 50	45, 18	168, 75	247, 11	1
2	258, 42	198, 94	86, 17	49, 70	172, 25	248, 65	2
3	257, 52	195, 91	81, 82	54, 20	175, 70	250, 12	3
4	256, 54	192, 81	77, 44	58, 69	179, 09	251, 51	4
5	255, 47	189, 66	73, 04	63, 16	182, 43	252, 82	5
6	254, 33	186, 45	68, 62	67, 61	185, 71	254, 06	6
7	253, 11	183, 18	64, 17	72, 03	188, 94	255, 22	7
8	251, 81	179, 85	59, 71	76, 43	192, 11	256, 30	8
9	250, 44	176, 47	55, 23	80, 82	195, 22	257, 30	9
10	248, 99	173, 04	50, 73	85, 18	198, 27	258, 22	10
11	247, 47	169, 55	46, 21	89, 51	201, 26	259, 07	11
12	245, 87	166, 02	41, 68	93, 82	204, 18	259, 84	12
13	244, 19	162, 43	37, 14	98, 10	207, 05	260, 52	13
14	242, 44	158, 79	32, 59	102, 34	209, 85	261, 13	14
15	240, 62	155, 10	28, 03	106, 56	212, 59	261, 66	15
16	238, 72	151, 37	23, 46	110, 74	215, 27	262, 11	16
17	236, 75	147, 59	18, 88	114, 89	217, 87	262, 48	17
18	234, 71	143, 77	14, 30	119, 01	220, 41	262, 77	18
19	232, 60	139, 90	9, 71	123, 08	222, 89	262, 98	19
20	230, 42	135, 98	5, 12	127, 12	225, 30	263, 11	20
21	228, 16	132, 03	0, 52	131, 13	227, 64	263, 16	21
22	225, 83	128, 04	4, 08	135, 09	229, 91	263, 13	22
23	223, 44	124, 01	8, 66	139, 01	232, 11	263, 02	23
24	220, 98	119, 94	13, 25	142, 89	234, 24	262, 83	24
25	218, 46	115, 83	17, 84	146, 72	236, 30	262, 56	25
26	215, 87	111, 69	22, 42	150, 51	238, 28	262, 20	26
27	213, 21	107, 51	26, 99	154, 26	240, 20	261, 77	27
28	210, 48	103, 30	31, 55	157, 96	242, 03	261, 26	28
29	207, 69	99, 06	36, 11	161, 60	243, 80	260, 67	29
30	204, 84	94, 80	40, 65	165, 20	245, 49	260, 00	30
Grad.	+ VI^s	+ VII^s	± VIII^s	— IX^s	— X^s	— XI^s	Grad.

Summa vel differentia duarum quantitatum, duabus argumentis ex hac tabula depromptarum, erit variatio ſecularis in longitudine, quae, ſi angulum ſubſidiarium β adhibuiſti, per 10 multiplicanda eſt.

Ut uſus tabularum praecedentium, et modus, ſingulas reductiones perficiendi, clarius perſpiciantur, ſint exempli cauſa variationes ſeculares in latitudine et in longitudine pro ſeculo praeterito 1700 ad 1800 primae ſtellae Tauri (*Aldebaran*) e tabulis exquirendae.

I) Longitudo hujus ſtellae pro anno 1750 eſt $2^s\ 6^\circ\ 18'$.
Latitudo auſtralis $5^\circ\ 29'\ 16''$.
Variatio latitudinis per tabulam pro $2^s\ 6^\circ$ eſt . . + 50,″812
Pars proportionalis pro $18'$ . . . . . + 0, 070
Summa + 50, 882

Cum latitudo ſit auſtralis, ſignum + mutari debet in —, prout praeceptum tabulae monet. Imminutio itaque ſecularis latitudinis hujus ſtellae pro hoc ſeculo erit — 50,″882.

Formula noſtra: 52,″6318 ſin (long.*+$8^\circ\ 53'\ 13''$) eandem, quam tabula, exhibet quantitatem;
nam Long. α ♉ = $66^\circ\ 18' + 8^\circ\ 53'\ 13'' = 75^\circ\ 11'\ 13''$, adeoque
Log. ſin $75^\circ\ 11'\ 13''$ = 9,9853209
Log. 52,″6318 = 1,7212485
Log = 1,7065694 = 50,″882 Variatio ſecularis prorſus eadem ut ſupra.

II) Quaeratur variatio ſecularis in latitudine ſtellae ι Virginis (*Vindemiatricis*).
Longitudo hujus ſtellae 1750 = $6^s\ 6^\circ\ 28'$.
Latitudo borealis = $16^\circ\ 13'\ 35''$.
Erit variatio latit. per tab. cum argum. $6^s\ 6^\circ$ . . — 13,″521
Pars proportionalis pro $28'$ . . . . . — 0, 412
Summa — 13,″933

Ideoque variatio ſecularis latitudinis fixae ι Virginis erit pro ſeculo 1700 — 1800 = — 13,″933.

III) Sit e tabula altera, variatio ſecularis in longitudine pro eodem ſeculo, et pro fixa α Tauri invenienda.

Quaerendus primo loco eſt angulus ſubſidiarius α, quem cum argumento latitudinis $5^\circ\ 29'\ 16''$ invenies = $2^s\ 29^\circ\ 27,'0$.

Erunt itaque argumenta duo, cum quibus tabula bis ingrediendа eſt

Arg. I = $2^s\ 6^\circ\ 18' + 2^s\ 29^\circ\ 27' = 5^s\ 5^\circ\ 45' =$ + 253,″75
Arg. II = 2 6 18 — 2 29 27 = 11 6 51 = — 255, 04
— 1, 29

Cum latitudo ſit auſtralis, ſignum — in + convertendum eſt, adeoque incrementum ſeculare longitudinis α Tauri erit + 1,″29.

Si eundem calculum per formulas noſtras inſtitueris, ſive per hanc $52,''6318 \cos(\text{long.}^* + 8^\circ\ 53'\ 13'') \tan g.\ \text{latit.}^*$, ſive per alteram

$$5\ (52,''6318)\ \cos\ (\text{long.}^* + 8^\circ\ 53'\ 13'' + \alpha)$$
$$5\ (52,''6318)\ \cos\ (\text{long.}^* + 8\ \ 53\ \ 13\ \ - \alpha)$$

eundem invenies valorem, prout praeſens calculi typus demonſtrat.

Sit variatio haec per formulam primam determinanda; erit

$\text{Log.cos.long.}\ 66^\circ\ 18' + 18^\circ\ 53'\ 13'' = 75^\circ\ 11'\ 13'' = 9{,}4076737$
$\text{Log.}\ 52,''6318 = 1{,}7212485$
$\text{Log. tang latit.}\ 5^\circ\ 29'\ 26'' = 8{,}9826047$
$\text{Log.} = 0{,}1115269 = 1,''29$

ut ſupra.

Per formulam alteram habebis

$\text{Log.cos.long.}\ 66^\circ\ 18' + 8^\circ\ 53'\ 13'' + 2^s\ 29^\circ\ 27' = 164^\circ\ 38'\ 13'' = + 9{,}9841970$
$\text{Log.}\ 5\ (52,''6318) = 263,''1590 = 2{,}4202183$
$\text{Log.} = + 2{,}4044153 = + 253,''75$

$\text{Log.cos.long.}\ 66^\circ\ 18' + 8^\circ\ 53'\ 13'' - 2^s\ 29^\circ\ 27' = 345^\circ\ 44'\ 13'' = - 9{,}9864021$
$\text{Log}\ 5\ (52,''6318) = 263,''1590 = 2{,}4202183$
$\text{Log.} = - 2{,}4066204 = - 255,''04$
$- 1,\ 29$

Ergo ex utraque formula utut e tabula idem prorſus valor prodit.

IV) Sit variatio ſecularis longitudinis pro fixa α Virginis definienda.

Per ejusdem ſtellae latitudinem $16^\circ\ 13'\ 35''$ invenies primo angulum ſubſidiarium $\alpha = 2^s\ 28^\circ\ 20'$; itaque

$\text{Arg. I} = 6^s\ 6^\circ\ 28' + 2^s\ 28^\circ\ 20' = 9^s\ 4^\circ\ 48' = - 62,''27$
$\text{Arg. II} = 6\ \ 6\ \ 28\ \ - 2\ \ 28\ \ 20 = 3\ \ 8\ \ 8 = + 77,\ 02$
$\text{Variatio ſecularis α Virginis in long.} = + 14,\ 75$

Idem hic numerus ex utraque formula periculum facienti obviam veniet.

V) Quaeritur variatio ſecularis in longitudine fixae δ Draconis.

Eſt longitudo hujus ſtellae ad epocham anni $1750 = 0^s\ 13^\circ\ 52'$, latitudo $= 82^\circ\ 52'\ 50''$.

Exquirendus nunc eſt angulus ſubſidiarius β e tabula ſecunda, quem invenies $= 2^s\ 25^\circ\ 24'$

$\text{Long. δ Draconis} = 0\ 13\ \ 52$
$\text{Summa Arg. I} = 3^s\ \ 9\ \ 16' \ldots + 81,''99$
$\text{Different. Arg. II} = 9\ \ 18\ \ 28 \ldots - 120,\ 90$
$\text{Diminutio ſecularis in long. δ Draconis} - 38,''93$

Si per formulam poſtremam periculum inſtitueris, invenies

Long. ☽ Drac. = 0ˢ 13° 52' 0"
Angul. formul. = + 8 53 13
0 22 45 13
Ang. ſubſid. β ± 2 25 24

Summa Arg. I = 3ˢ 18° 9' 13" log. cof 71° 50' 47" = + 9,4935497
Differ. Arg. II = 9 27 21 13 log. cof 62 38 47 = ... — 9,6622675
log. 263,"1590 = 2,4202183 2,4202183
+ 1,9137680 — 2,0824858
+ 81,"99 — 120,"91

Differentia — 38,"93 eadem ut ſupra.

Ex motu ſeculari poteris extemplo motum pro quovis annorum numero depromere. Sic in ultimo noſtro exemplo, ſi motus pro 12 annis requiratur, habebis illico

$$\frac{-38,"93 \times 12}{100} = -4,"6716$$

et ſic porro. Si maximae ſtudes accurationi, pars proportionalis pro data die adhibenda adhuc erit.

Quoniam ſtellarum longitudines praeceſſione aequinoctiorum continuo mutantur, per eundem hunc effectum et illarum aſcenſiones rectae et declinationes jugiter variantur. Ad ſupputandas has mutationes plures ab aſtronomis excogitatae fuerunt formulae, quarum maxime obviae et notiſſimae ſunt hae:

I) Variatio praeceſſionis aequinoctiorum in aſcenſione recta =

$$\frac{\text{praec. aequin. in long.} \times \text{cof. latit.} \times \text{cof. ang. poſit.}}{\text{cof. declin.}}$$

et

II) Variatio praeceſſionis aequinoctiorum in declinatione =

variat. in Æ. × cof. decl. × tang. ang. poſit.

Sed cum inventio anguli, quem dicimus *Poſitionis*, id eſt, anguli quem facit ad centrum ſtellae circulus declinationis cum circulo latitudinis, aliquibus moleſta viſa ſit, cum angulus hic per formulam

$$\text{ſin ang. poſit.} = \frac{\text{cof Æ ſin obliq. eclipt.}}{\text{cof latit.}}$$

primum definiendus eſt, (ſi tabulae generales pro eruendo hoc angulo, quae paſſim in tabulis aſtronomicis occurrunt, ad manus non ſunt,) aſtronomi alias condiderunt formulas ad calculum magis idoneas, ab angulo hoc et a latitudine ſtellae, quae equidem non ſemper in

promtu eſt, liberatas; quarum illae a Cl. *DELAMBRE* prolatae, quas ſupra jam commemoravimus, potiorem merentur locum, quippe quae ſolum cognitionem aſcenſionis rectae, declinationis et obliquitatis eclipticae requirunt. Formulas has pertractavit denuo Cl. DE *LA PLACE* in tomo II, pag. 350 operis *Mécanique céleſte*, ubi ſequentem generaliſſimam induunt formam, in qua probe notandum, declinationem auſtralem ſemper negativam eſſe.

Variat. in AR. = praec. in long. (coſ. obl. eclipt. + ſin obl. ecl. ſin AR. tang. decl.) —
— variat. obl. eclipt. coſ. AR. tang. decl. — 0,"201683

et

Variat. in declin. = praec. in long. ſin obl. eclipt. coſ AR. +
+ variat. obl. ecl. ſin AR.

Sunt, qui primam ſupputandi rationem poſteriori anteferant, quia formula, variationem aſcenſionis rectae exhibens, proprietate, ut vocant, logarithmica gaudet, et cum ſubſidio angulorum poſitionis, qui in tabulis peculiaribus parati inveniuntur, calculus omnis logarithmis abſolvitur; poſterior formula vero numeros naturales poſtulat.

Si itaque praeceſſionem noſtram in longitudinem ad formulas has applicamus, habebimus pro praeſenti ſeculo primum partem conſtantem praeceſſionis in aſcenſionem rectam =

50,"23900 coſ 23° 27′ 23″ — 0,"20168 = 45,"87992

dein partem variabilem =

50,"23900 ſin 23° 27′ 23″ ſin Æ tang decl. = + 20,"01109 ſin Æ tang. decl.

et pro variatione in declinatione = 20,"01109 coſ Æ.

Formularum harum ope variationes praeceſſionis aequinoctiorum cum in aſcenſionem rectam, tum in declinationem quam commodiſſime computantur, quod ut, ſine ullo fere negotio pro ſeculis vel elapſis vel futuris fieri poſſet, ſequentem tabulam referre non inutile duximus, in qua omnes quantitates conſtantes et variabiles ad calculandam hanc praeceſſionem annuam contulimus, a ſeculo decimo quinto usque ad ſeculum vigeſimum aerae noſtrae.

Anni	Praeceſſio Aequinoctior. univerſa in longitud.	Praeceſſ. Aequinoctior. luni-ſolaris in longit.	Pars conſtans praeceſſ. Aequinoct. in AR.	Pars variabilis praeceſſ. Aequinoct. in AR. et in declinat.
1450	49,"98410	50,"16871	45,"80071	20,"01789
1550	50, 00737	50, 19211	45, 82709	20, 01562
1650	50, 03067	50, 21554	45, 85349	20, 01336
1660	50, 03300	50, 21789	45, 85613	20, 01313
1670	50, 03534	50, 22023	45, 85878	20, 01291
1680	50, 03768	50, 22258	45, 86142	20, 01268
1690	50, 04001	50, 22492	45, 86406	20, 01245
1700	50, 04235	50, 22727	45, 86671	20, 01223
1710	50, 04469	50, 22962	45, 86935	20, 01200
1720	50, 04702	50, 23196	45, 87199	20, 01177
1730	50, 04935	50, 23431	45, 87463	20, 01154
1740	50, 05168	50, 23665	45, 87728	20, 01132
1750	50, 05400	50, 23900	45, 87992	20, 01109
1760	50, 05633	50, 24135	45, 88257	20, 01086
1770	50, 05867	50, 24370	45, 88521	20, 01064
1780	50, 06101	50, 24605	45, 88786	20, 01041
1790	50, 06334	50, 24840	45, 89050	20, 01018
1800	50, 06568	50, 25075	45, 89315	20, 00996
1810	50, 06802	50, 25309	45, 89579	20, 00973
1820	50, 07035	50, 25544	45, 89844	20, 00950
1830	50, 07269	50, 25779	45, 90108	20, 00927
1840	50, 07502	50, 26014	45, 90373	20, 00905
1850	50, 07736	50, 26249	45, 90637	20, 00882
1950	50, 10075	50, 28601	45, 93284	20, 00655

Sint exempli gratia variationes, a praeceſſione punctorum aequinoctialium in aſcenſionem rectam et in declinationem oriundae, pro ſeculo decimo ſexto definiendae; ex tabula ſequentes conficies formulas:

Praeceſſio in Æ = 45,"82709 + 20,"01562 ſin Æ tang. decl.
Praeceſſio in declin. = 20,"01562 coſ Æ.

Ut uſus formularum harum magis eluceat, eas ſequentibus illuſtrabimus exemplis et calculi typis, qui nullum jam hallucinationis periculum relinquent.

Exemplum I.

Quaeratur e. g. praeceſſio in aſcenſionem rectam, et in declinationem Spicae Virginis ab anno 1760 ad annum 1800. Ex Cl. *BRADLEJI* fixarum catalogo habetur pro 1760 aſcenſio recta α Virginis 6ʰ 18ᵐ 8′ 44,"1 cum praeceſſione annua + 47,"003, declinatio auſtralis 9° 54′ 3,"0, praeceſſio annua + 18,"987. Sed cum terminus

intermedius ſit 1780, poſitiones ſuperiores ad epocham anni 1780 reductae in ſequentes abeunt. Æ α Virginis = 6ˢ 18° 24′ 24,″16, declinatio auſtralis = 10° 0′ 22,″74.

Proveniunt ex tabula formulae ſequentes:

Praeceſſio in Æ = 45,″88786 + 20,″01041 ſin Æ tang decl.
Praeceſſio in declin. = 20,″01041 coſ Æ.

et calculus ſequenti abſolvitur modo:

45,″88786 × 40 = 1835,″5144 = 30′ 35,″5144 pars conſtans
Log. 20,″01041 = 1,3012560 +
Log. 40 . . . . = 1,6020600 +
Log. ſin AR . . = 9,4993573 −
Log. tang decl. = 9,2465997 −
1,6492730 . + 44, 5937 pars variabil.
+31′ 20,″1081
} praeceſſio in AR.

pro variatione in declinatione erit

Log. 20,″01041 = 1,3012560 − quia declinatio auſtralis
Log. 40 . . . = 1,6020600 +
Log. coſ AR. . = 9,9771926 −
2,8805086 . . . + 12′ 39,″466

AR. α ♍ 1760 ſecundum Cl. *Bradley*	6ˢ	18°	8′	44,″1	
Variat. in AR. pro 40 annis . .	+		31	20, 108	
AR. 1800	6	18	40	4, 208	
AR. 1800 ſecundum Cl. *Maskelyne* vero eſt	6	18	40	6, 060	
Differentia	—			1, 852	— 1,″852
Motus proprius ſec. Cl. *Maskelyne* pro 40 ann.	—			0, 600	ſec. Cl. *Hornsby* — 2, 816
Differentia	+			1, 252	— 0, 964
Decl. α ♍ 1760 ſecundum Cl. *Bradley*				9° 54′ 3,″0	
Variatio in declin. pro 40 annis				+ 12 39, 466	
Declinatio 1800				10 6 42, 466	
Declin. 1800 ſecund. Cl. *Piazzi* vero eſt . . .				10 6 42, 800	
Differentia				— 0, 334	
Motus proprius ſec. Cl. *Maskelyne* pro 40 ann. .				+ 7, 266	
Differentia				+ 7, 266	

Exemplum II.

Quaeratur praeceſſio in aſcenſionem rectam et in declinationem Arcturi ab anno 1760 ad annum 1800. Ex Cl. *BRADLEJI* fixarum catalogo habetur

pro 1760 aſcenſio recta 7^s 1° 10' 53,"0, praeceſſio annua + 42,"020
— 1780 — — 7 1 25 53, 4

et

pro 1760 declinatio bor. 20° 26' 32,"9, variatio annua — 17,"077
— 1780 — — 20 20 51, 4

45,"88786 × 40 = 1835,"5144 = + 30' 35,"5144 pars conſt.

Log. 20,"01041 = 1,3012560 +
Log. 40 = 1,6020600 +
Log. ſin AR. = 9,7170299 —
Log. tang. decl. = 9,5692055 +
2,1895514 . . — 2 34, 7215 pars var.
+ 28' 0,"7929

} praeceſſio in AR.

pro variatione in declinatione erit

Log. 20,"01041 = 1,3012560 +
Log. 40 . . = 1,6020600 +
Log. coſ AR. = 9,9311607 —
2,8344767 . . — 11' 23,"088

AR. Arcturi 1760 ſecund. Cl. *Bradley* . . . . . 7^s 1° 10' 53,"0
Variatio in AR. pro 40 annis + 28 0, 793
AR. 1800 . . . . . 7^s 1° 38' 53,"793
AR. 1800 ſecund. Cl. *Maskelyne* vero eſt . . . 7 1 38 6, 960
Differentia . . . . . + 46,"833 . . . . . + 46,"833
Motus propr. ſec. Cl. *Maskelyne* pro 40 ann. . . — 50, 400 ſecundum Cl. *Hornsby* — 47, 716
Differentia . . . . . — 3,"567 . . . . . — 0,"883

Declinatio Arcturi 1760 ſecundum Cl. *Bradley* 20° 26' 32,"9
Variat. in declin. pro 40 annis . . . . . — 11 23, 088
Declinatio 1800 . . . . . 20° 15' 9,"812
Declinatio 1800 ſec. Cl. *Piazzi* vero eſt . . . 20 13 48, 800
Differentia . . . . . + 1 21, 012
Motus proprius ſec. Cl. *Maskelyne* pro 40 ann. — 1 8, 800
Differentia . . . . . + 12,"212

Exemplum III.

Quaeratur praeceſſio in aſcenſionem rectam et in declinationem Capellae (α Aurigae) ab anno 1690 ad annum 1790. Terminus medius eſt annus 1740, ideoque pars conſtans praeceſſionis = 45,"87728 et pars variabilis = 20,"01132.

pro 1760 aſcenſio recta 2^s 14° 44' 59,"5, praeceſſio annua + 65,"629
— 1740 — — 2 14 23 6, 9

et

pro 1760 declinatio bor. 45° 43' 32,"5 praeceſſio annua + 5,"370
— 1740 — — 45 41 45, 1

45,"87728 × 100 = 4587,"728 = + 1° 16' 27,"728 pars conſt.

Log. 20,"01132 = 1,3012757 +
Log. 100 . . = 2,0000000 +
Log. ſin AR. = 9,9836684 +
Log. tang decl. = 0,0105501 +
3,2954942 + 32 54, 669 pars var.
+ 1° 49' 22,"397

} Praeceſſio in AR.

pro variatione in declinatione erit

Log. 20,"01132 = 1,3012757 +
Log. 100 . . = 2,0000000 +
Log. cof AR. = 9,4300230 +
2,7312987 . . 8' 58,"640

AR. Capellae 1690 ſecund. Cl. *Flamſteed*	2ˢ	13°	28'	0"	
Variat. in AR. pro 100 annis . .	+	1	49,	22, 397	
AR. 1790	2	15	17	22, 397	
AR. 1790 ſec. Cl. *Maskelyne* vero eſt	2	15	17	59, 700	
Differentia	—			37,"303	— 37,"303
Motus propr. ſec. Cl. *Maskelyne* pro 40 ann.	+			21, 000 ſec. Cl. *Hornsby*	+ 21, 420
Differentia	+			16,"303	+ 15, 883
Declinatio Capellae 1690 ſecund. Cl. *Flamſteed* . . .	45°	37'	55"		
Variat. in declin. pro 100 annis	+	8	58, 640		
Declinatio 1790	45	46	53, 640		
Declinatio 1790 ſec. Cl. *Piazzi* vero eſt	45	46	36, 000		
Differentia	+		17, 640		
Motus proprius ſec. Cl. *Maskelyne* pro 40 ann. . . .	—		44, 000		
Differentia	—		26, 360		

Cl. *DELAMBRE* ex his formulis quinque tabulas generales condidit, et in Ephemeridibus aſtronomicis Pariſienſibus ad annum 1792*) edidit, quarum una variationem annuam in declinatione exhibet ad dena quaeque minuta aſcenſionis rectae, altera ſuppeditat ſecundam partem variationis annuae in aſcenſione recta ad quosque gradus declinationis et aſcenſionis rectae ſiderum, in qua valores ad ſexageſimum tantummodo declinationis gradum producti ſunt, quoniam ultra hunc limitem illorum differentiae motu admodum irregulari procedunt.

Qui

*) Conn. des tems, Année 1792, pag. 214.

Qui variationem, quam regreſſus annuus punctorum aequinoctialium in angulum poſitionis parit, ſupputare cupiunt, per ſequentem formulam poterunt perficere calculum:

— 50,"23906 ſin obl. eclipt. ſin Æ. ſec. declin.

vel pro praeſenti ſeculo

— 20,"01109 ſin Æ. ſec. declin.

Inaequalitas actionis ſolis, quae inter aequinoctiorum et ſolſtitiorum intervalla intercedit, inaequalitatem annuam in praeceſſione media ſeu uniformi aequinoctiorum gignit, quae ad unum minutum ſecundum aſſurgit, quaeque in exquiſitioribus noſtri aevi obſervationibus nequaquam negligenda eſt. Accedit ad illam aequatio altera, quae inaequalitatem dimidii minuti ſecundi in obliquitatem eclipticae parit, quo fit, ut obliquitas uno minuto ſecundo major ſit tempore aequinoctiorum, quam tempore ſolſtitiorum. Hi duo effectus per unicam poſſunt effingi hypotheſin, tribuendo nimirum telluris polo motum ſemi-annuum, quo circellum unius minuti ſecundi in diametro in conſequentia ſignorum deſcribat, qui motus duplum motum ſolis in longitudine exaequat, et ſemper tempore aequinoctiorum in maxima eclipticae a polo diſtantia eſt. Oritur exinde quoque motus, quo ſiderum diſtantiae apparentes a polo aequatoris bis quovis anno variationi unius minuti ſecundi ſubjiciuntur.

Ad ſupputandas itaque partes variationis, cuivis anni tempori reſpondentes, in quibus hujus ſemi-annuae inaequalitatis ratio habetur, ſubnectimus tabulam ſequentem ad mentem Cl. *MASKELYNE*, ex qua numeri decimales, datae anni diei reſpondentes, excerpuntur, et in datas annuas variationes ducti ejusdem variationis quantitates pro quavis anni die cum in aſcenſione recta, tum in declinatione exhibebunt.

Sit e. g. aſcenſio recta Capellae, quam ſupra pro initio anni 1790 ſupputavimus, ad diem ſextam Auguſti reducenda; erit itaque pars proportionalis = 65,"629 × 0,62 = 40,"690 (pars ſimplex proportionalis tantummodo fuiſſet 39,"197). Ideoque aſcenſio recta Capellae pro data die ſexta Auguſti = 2^s 15° 18′ 3,"087.

cum Variat. ann. X

Menſes	Dies Menſ.	Factores
Januarius	1	0, 01
	3	0, 02
	6	0, 03
	9	0, 04
	12	0, 05
	15	0, 06
	19	0, 07
	22	0, 08
	25	0, 09
	28	0, 10
Februarius	1	0, 11
	4	0, 12
	8	0, 13
	12	0, 14
	16	0, 15
	21	0, 16
	25	0, 17
Martius	2	0, 18
	7	0, 19
	12	0, 20
	17	0, 21
	22	0, 22
	27	0, 23
Aprilis	1	0, 24
	6	0, 25
	11	0, 26
	15	0, 27
	20	0, 28
	24	0, 29
	28	0, 30
Majus	2	0, 31
	5	0, 32
	9	0, 33
	12	0, 34
Majus	16	0, 35
	19	0, 36
	22	0, 37
	25	0, 38
	28	0, 39
	31	0, 40
Junius	3	0, 41
	6	0, 42
	9	0, 43
	12	0, 44
	15	0, 45
	18	0, 46
	21	0, 47
	24	0, 48
	27	0, 49
	29	0, 50
Julius	2	0, 51
	5	0, 52
	8	0, 53
	11	0, 54
	14	0, 55
	17	0, 56
	20	0, 57
	23	0, 58
	27	0, 59
	30	0, 60
Auguſtus	3	0, 61
	6	0, 62
	10	0, 63
	14	0, 64
	18	0, 65
	22	0, 66
	26	0, 67
	30	0, 68
September	4	0, 69
	9	0, 70
	14	0, 71
	19	0, 72
	24	0, 73
	29	0, 74
October	4	0, 75
	9	0, 76
	14	0, 77
	18	0, 78
	23	0, 79
	27	0, 80
	31	0, 81
November	4	0, 82
	8	0, 83
	11	0, 84
	15	0, 85
	18	0, 86
	21	0, 87
	24	0, 88
	27	0, 89
	30	0, 90
December	3	0, 91
	6	0, 92
	9	0, 93
	12	0, 94
	15	0, 95
	18	0, 96
	21	0, 97
	23	0, 98
	26	0, 99
	29	1, 00
	31	1, 01

Praemiſſis his, venio jam ad inveſtigationem quantitatis mediae praeceſſionis aequinoctiorum, de qua inter aſtronomos non convenit, et quam exponere ſupra polliciti ſumus. Quam vero ad eliciendam hanc quantitatem ingreſſus ſim viam, paucis oſtendam.

Ad excutiendam praeceſſionis hujus quantitatem, aſtronomi complures variasque periclitati ſunt methodos. Sunt, quibus veterum obſervationes, obſervationibus recentiorum conferre placuerit. Nos e contrario ab hoc indaginis modo conſulto abſtinendum duximus, cum plerique ſiderum poſitiones priſcis temporibus apud Chaldaeos, Graecos, Arabes, Perſas exhibitae non ſemper obſervationibus revera inſtitutis nitantur, ſed ex confictis hypotheſibus ſiderum loca exhibeant, additis ſcilicet longitudinum praeceſſionibus, quas quisque pro ſua ſententia adhibendas putaverat. Sic Hipparchi ſiderum loca (ut ipſum Ptolemaeum feciſſe ſuspicantur) pro cujusvis arbitrio et ad quaevis tempora ſub fucata et ſimulata ſpecie revertuntur.

Sunt, qui *FLAMSTEEDII* obſervationibus majorem ad hunc finem tribuant fidem, quoniam tubis opticis, organis egregie elaboratis, et methodis accuratioribus fuerint inſtitutae. Sed et illas recuſare ſatius duximus; 1mo, quia *FLAMSTEEDII* poſitiones, ſi quid fructus exinde capeſſendum, ex ipſis obſervationibus ab ovo reducendae eſſent, adhibitis undique theoriis nuperis (opus herculeum); 2do, quia hanc reductionem inſtituere, etiamſi libuiſſet, operae pretium non fuiſſet, cum complurimarum fixarum motus proprios non ſatis cognitos tanto majorem aequum valorem adulterandi habeant vim, quo remotiores inter ſe ſunt obſervationes, et quo pauciores fixarum adhibitarum ſunt numeri, ex quibus minus perfecta compenſatio ſperanda eſt *). 3^tio^, ſi quid in imminutione obliquitatis eclipticae dubii ſupereſt, id tum eo plus incertitudinis inferret, quo longiore temporis intervallo inter ſe diſſitae ſunt obſervationes. Argumenta haec experientia Cl. *LE GENTIL* fulciri, ex actis ſcientiarum academiae Pariſinae ad annum 1787, pag. 545 apparebit, ubi cl. viri ſententia ipſius verbis ita ſe habet:

„*Nous finirons ce mémoire par la remarque ſuivante, au ſu-*
„*jet des étoiles du catalogue de FLAMSTEED, que l'on pour-*
„*roit comparer avec les obſervations de notre ſiècle. Nous penſons*
„*qu'elles ne peuvent rien donner d'aſſez exact; en effet, en quelque*
„*grand nombre, que l'on puiſſe les employer, on aura toujours la*

*) Conſer. Monatl. Correſpondenz, May-Heft 1806 pag. 433.

„préceſſion entre 47" et 53" par an, c'eſt-à-dire, une différence „de ſix ſecondes au moins entre le plus fort et le plus foible réſul- „tat dans une année: or, par les obſervations d'Hipparque, je n'ai „que 1° 15' du plus fort réſultat au plus foible, ce qui ne produit „ſur 1882 ans que 2° et environ un tiers de différence par année; „d'où il eſt aiſé de conclure que pour le ſiècle préſent, les obſer- „vations d'Hipparque ſont préférables à celles de FLAMSTEED. „Dans les ſiècles ſuivans, lorsque les mouvemens propres des étoiles „qu'on voudra employer pour cette recherche ſeront exactement connus, „il n'y a pas de doute qu'on ne parvienne à fixer la préceſſion „avec encore plus de préciſion, qu'on ne le peut faire de nos „jours." . . . .

Poſtquam Cl. *BARRY* inſigniorum ſtellarum zodiacalium declinationes, ad initium anni 1793 in ſpecula aſtronomica Mannhemienſi (quae exquiſitiſſimis inſtrumentis, inprimis Quadrante murali *BIRDIANO* 8 pedum et Sectore zenithali *SISSONIANO* 12 pedum inſtructa eſt) maxima cum ſolertia definitas, pro ſua benevolentia in autographo, quam humaniſſime mecum communicaverat, et ego pro mea cauſa eodem fere tempore inſigniorum harum fixarum aſcenſiones rectas in ſpecula *Erneſtina* Seebergenſi per tubum culminatorium *RAMSDENII* 8 pedum, quod organum exſtat facile perfectiſſimum, maxima cum cura definiveram; opportuna mihi res viſa eſt, poſitiones has noviſſimas, nondum uſurpatas, cum illis potiſſimum conferre, quae optimam prae ſe ferunt notam. Hanc, praeter alias, cl. virorum *BRADLEJI* et *MAYERI* obſervationes primo loco promereri, nemo (ut opinor) inficiabitur, aut negabit. Qui vero molimen hoc, a nobis ſuſceptum, ex eo ſuſpectum habere volunt, quod nos temporis intervallum non ſatis magnum nacti fuiſſemus, eos quaeſo, ut quod per brevius temporis ſpatium ex una parte deperditum putant, id nos ex altera parte obſervationum acumine lucratos eſſe, perpendant. Maxima differentia, quae in fixarum collatione, ſive *BRADLEJANIS*, ſive *MAYERIANIS* obſervationibus cum noſtris occurrit, perraro ad 20" vel ultra aſſurgit, ut tabula ſubſequens commonſtrat; et maximum, quod inde in eliciendam praeceſſionis quantitatem per ſpatium 40 annorum redundare poteſt dubium, vix partium aliquarum minuti ſecundi decimarum eſt. Qui error per ſesqui mille obſervationum numerum dilutus, vix aliquarum centeſimarum incertitudinem relinquet, ut propria experientia et propoſiti noſtri exitu admodum ſecundo mox afferendo, edocti ſuimus. Ex veterum autem et *FLAMSTEEDII* obſervationibus, ut Cl. *Le*

GENTIL recte monet, dubium hoc ſane in ſecundorum pauculorum numerum increviſſet.

Quaternas itaque comparationes, ad quantitatem mediam praeceſſionis annuae eruendam, inire nobis propoſitum erat, quarum binae ex ſiderum declinatione, binae ex illorum aſcenſione recta colligere animus erat, componendo nimirum

α) 1) Declinationes Cl. *BARRY* cum declinationibus Cl. *BRADLEJI* 33 annorum intervallo inter ſe disjunctas.

2) Easdem cum declinationibus Cl. *MAYERI* 37 annorum ſpatio diſſitas.

β) 3) Aſcenſiones rectas noſtras cum aſcenſionibus rectis Cl. *BRADLEJI* per ſpatium 40 annorum.

4) Easdem cum aſcenſionibus rectis Cl. *MAYERI* ſpatium 44 annorum amplectentes.

α) 1) Cum Catalogus Cl. *BARRY* ad annum 1793, Cl. *BRADLEJI* vero ad annum 1760 conſtructus ſit; differentia declinationum cujusvis ſtellae per coſinum ℞. * ad annum $1776\frac{1}{2}$ (medium ſcilicet inter 1760 et 1793 terminum) diviſa eſt; unde mox quantitas maxima praeceſſionis in declinationem pro 33 annorum ſpatio innotuit. Omnis autem fixa, quae non ultra trigeſimum gradum a coluris diſſita eſt, ab hac comparatione excludebatur, quoniam hoc loco variatio annua in declinatione dimidiam tantummodo maximae variationis partem praebere valet. Peracto hoc experimento ſequentes nacti ſumus valores:

Declinationes Cl. BRADLEJI (1760) comparatae cum declinationibus Cl. BARRY (1793).

Nomen Stellae	Motus in declinatione per 33 annos	Ascensio recta media pro 1776,5	Maximum variationis in declinatione
d ♓	666,"7	2° 16′ 40″	667,"23
ε ♓	650, 0	12 50 20	666, 76
e ♓	638, 8	14 13 18	646, 61
ζ ♓	641, 2	15 31 7	665, 46
η ♓	624, 6	19 53 16	664, 22
π ♓	625, 9	21 19 2	671, 87
105 ♓	614, 9	21 54 53	662, 79
ν ♓	617, 0	22 27 14	667, 61
ο ♓	608, 8	23 24 10	663, 37
γ ♈	598, 7	25 19 36	662, 37
β ♈	594, 2	25 34 57	658, 79
ι ♈	596, 0	26 17 36	664, 79
λ ♈	594, 7	26 22 48	663, 83
α ♓	594, 0	27 36 46	670, 36
α ♈	579, 6	28 39 17	660, 50
19 ♈	573, 5	30 13 32	663, 73
θ¹ ♈	551, 7	31 26 0	646, 59
35 ♈	529, 0	37 35 50	667, 66
ε ♈	499, 5	41 37 0	668, 14
δ ♈	477, 0	44 43 14	671, 30
ζ ♈	465, 7	45 31 17	664, 69
τ² ♈	454, 0	47 29 9	671, 83
f ♉	429, 5	49 38 20	661, 86
17b ♉	406, 0	52 54 38	673, 24
e ♉	401, 4	52 59 0	666, 72
d ♉	395, 1	53 16 36	660, 69
η ♉	391, 6	53 33 28	659, 27
A ♉	349, 9	57 52 44	658, 09
φ ♉	314, 4	61 39 36	662, 33
γ ♉	316, 5	61 46 28	669, 23

I. Summa $30 \times 660 + 121,"93$

Nomen Stellae	Motus in declinatione per 33 annos	Ascensio recta media pro 1776,5	Maximum variationis in declination
χ ♉	307,"1	62° 15′ 10″	659,"62
δ² ♉	304, 7	62 31 4	660, 25
δ² ♉	299, 7	62 48 30	655, 85
κ¹ ♉	298, 6	63 1 13	658, 16
κ² ♉	302, 9	63 2 0	667, 95
υ¹ ♉	302, 0	63 14 27	670, 77
ε ♉	294, 7	63 53 50	669, 80
θ¹ ♉	295, 4	63 57 26	672, 86
θ² ♉	299, 5	63 58 51	682, 74
α ♉	270, 5	65 46 47	659, 38
τ ♉	256, 8	67 12 53	663, 07
φ ♊	277, 3	114 56 52	657, 45
μ ♋	315, 2	118 15 42	655, 08
ψ² ♋	337, 8	119 14 31	691, 52
β ♋	341, 9	121 6 45	661, 70
θ ♋	376, 4	124 42 32	661, 05
η ♋	377, 5	124 56 20	659, 15
γ ♋	402, 6	127 35 0	660, 09
δ ♋	413, 0	127 59 30	670, 94
α¹ ♋	426, 7	130 55 40	651, 35
α² ♋	436, 9	131 33 46	658, 53
κ ♋	452, 5	133 54 30	652, 48
ξ ♋	457, 0	134 7 10	656, 46
ω ♌	501, 1	139 7 10	662, 76
10 ♌	518, 0	141 20 20	663, 37
ο ♌	520, 9	142 18 10	658, 32
ε ♌	530, 0	143 16 58	661, 18
ν ♌	549, 6	146 32 50	658, 73
π ♌	554, 5	147 5 55	660, 56
η ♌	566, 8	148 46 50	662, 78

II. Summa $30 \times 660 + 83,"95$

Declinationes Cl. BRADLEJI (1760) comparatae cum declinationibus Cl. BARRY (1793).

Nomen Stellae	Motus in declinatione per 33 annos	Afcenfio recta media pro 1776,5			Maximum variationis in declinatione
A ♌	566,"1	149°	0′	32″	660,"37
α ♌	565, 6	149	6	50	659, 06
ζ ♌	576, 2	151	3	24	658, 45
γ ♌	587, 1	151	54	18	665, 51
ρ ♌	598, 7	155	15	34	659, 21
48 ♌	610, 1	155	47	8	668, 95
55 ♌	625, 5	161	3	5	661, 34
56 ♌	622, 4	161	6	17	657, 85
d ♌	629, 7	162	15	20	661, 16
c ♌	625, 1	162	17	23	656, 20
χ ♌	629, 8	163	22	22	657, 29
δ ♌	646, 0	165	32	38	667, 12
θ ♌	642, 9	165	37	30	663, 68
75 ♌	647, 1	166	26	50	665, 64
76 ♌	645, 0	166	51	50	662, 33
σ ♌	646, 4	167	24	10	662, 35
79 ♌	646, 9	168	8	40	661, 00
τ ♌	644, 7	169	6	40	656, 52
e ♌	650, 8	169	43	33	661, 40
υ ♌	647, 8	171	22	40	658, 23
ξ^1 ♍	649, 6	173	26	24	653, 91
ν ♍	659, 3	173	35	30	663, 45
β ♌	658, 9	174	24	45	662, 04
β ♍	678, 0	174	45	37	680, 84
π ♍	660, 0	177	31	12	660, 52
η ♍	659, 0	182	7	20	659, 45
c ♍	656, 6	182	15	20	657, 11
χ ♍	656, 3	186	56	5	661, 14
γ ♍	657, 1	187	36	30	662, 94
δ ♍	648, 7	191	5	30	661, 05

III. Summa $30 \times 660 + 46,"11$

Nomen Stellae	Motus in declinatione per 33 annos	Afcenfio recta media pro 1776,5			Maximum variationis in declinatione
ε ♍	639,"1	192°	45′	56″	655,"30
g ♍	644, 6	194	3	16	664, 50
θ ♍	638, 2	194	36	5	659, 50
α ♍	621, 2	198	21	44	656, 03
2b ♍	617, 9	200	5	30	657, 94
98 ♍	564, 0	210	14	40	652, 86
λ ♍	558, 8	211	45	46	650, 31
μ ♎	510, 1	219	16	34	657, 43
α ♎	511, 1	219	38	20	663, 69
ξ^2 ♎	496, 0	221	10	8	658, 91
ν^1 ♎	478, 6	223	33	0	660, 35
ι^2 ♎	467, 7	224	52	52	660, 05
β ♎	452, 2	226	15	14	653, 96
ζ^{24} ♎	428, 1	230	4	50	667, 12
38 γ ♎	411, 9	230	45	50	651, 20
42 ♎	404, 9	231	46	44	654, 42
κ ♎	403, 4	232	16	46	659, 37
Δ^1 ♏	379, 8	235	3	36	663, 17
λ ♎	371, 1	235	5	57	648, 61
θ ♎	367, 8	235	17	0	645, 81
ψ ♎	360, 1	236	25	43	651, 17
δ ♏	360, 7	236	47	20	658, 54
β ♏	347, 4	238	7	10	657, 77
ω^1 ♏	345, 8	238	26	33	660, 72
ω^2 ♏	339, 8	238	35	2	651, 89
γ ♏	330, 8	239	45	36	656, 86
19 ♏	315, 0	241	48	24	666, 72
σ ♏	307, 8	241	54	40	653, 72
α ♏	302, 3	243	56	7	688, 03
α^2 ♐	342, 4	301	19	47	658, 50

IV. Summa $30 \times 660 - 55,"55$

Declinationes Cl. BRADLEJI (1760) comparatae cum declinationibus Cl. BARRY (1793).

Nomen Stellae	Motus in declinatione per 33 annos	Ascensio recta media pro 1776,5			Maximum variationis in declinatione
a^2 ♑	343,"8	301°	24'	41"	659,"66
σ ♑	348, 1	301	37	10	663, 96
β ♑	353, 9	302	6	24	665, 88
ρ ♑	366, 8	304	1	30	655, 52
υ ♑	398, 9	306	49	30	665, 53
ε ♒	414, 4	308	53	30	660, 03
μ ♒	426, 6	310	8	50	661, 65
η ♑	447, 5	312	54	58	657, 18
θ ♑	458, 1	313	20	28	667, 45
χ^1 ♑	465, 9	313	56	0	671, 50
ν ♒	462, 0	314	20	47	660, 94
φ ♑	477, 6	315	43	20	667, 08
29 ♑	476, 3	315	42	54	665, 35
32 ♑	491, 3	317	26	40	666, 97
ζ ♑	497, 0	318	28	0	663, 96
b ♑	500, 6	318	59	20	663, 41
ε ♑	515, 1	321	8	10	661, 54
ξ ♒	516, 8	321	27	22	660, 76
γ ♑	521, 9	321	55	18	663, 00
κ ♑	524, 9	322	32	20	661, 28
λ ♑	536, 3	323	37	20	666, 11
δ ♑	522, 6	323	40	12	648, 70
μ ♑	544, 2	325	16	20	662, 15
ο ♒	554, 8	327	56	15	654, 66
ι ♒	560, 2	328	35	15	656, 41
α ♒	558, 9	328	34	34	654, 97
35 ♒	564, 9	329	10	33	657, 83
θ ♒	573, 6	331	15	27	654, 20
ρ ♒	593, 5	332	6	27	671, 62
γ ♒	587, 8	332	31	37	662, 51

V. Summa 30 × 660 + 51,"81

Nomen Stellae	Motus in declinatione per 33 annos	Ascensio recta media pro 1776,5			Maximum variationis in declinatione
π ♒	592,"0	333°	28'	0"	661,"69
ζ ♒	597, 9	334	19	46	663, 37
σ ♒	597, 2	334	32	7	661, 46
η ♒	609, 4	335	58	0	667, 24
τ^2 ♒	620, 5	339	26	10	662, 73
λ ♒	626, 1	340	14	18	665, 28
δ ♒	624, 5	340	41	24	661, 73
Fomah.	621, 7	341	18	50	656, 29
β ♓	632, 9	343	7	40	661, 37
h^1 ♒	624, 7	343	22	28	651, 95
h^2 ♒	638, 4	343	25	4	666, 11
h^3 ♒	636, 1	343	33	30	663, 22
φ ♒	634, 5	345	41	10	654, 83
ψ^1 ♒	645, 1	346	2	33	664, 73
χ ♒	642, 1	346	19	0	660, 86
ψ^2 ♒	643, 2	346	34	15	661, 28
ψ^3 ♒	647, 2	346	49	55	664, 68
96 ♒	646, 3	346	57	3	663, 43
κ^1 ♓	645, 9	348	52	16	658, 27
λ ♓	654, 8	352	39	50	660, 31
19 ♓	659, 7	353	44	50	663, 66
ω ♓	657, 3	356	57	48	658, 23
29 ♓	663, 6	357	35	40	664, 18
30 ♓	668, 6	357	37	30	669, 17
33 ♓	671, 1	358	28	30	671, 34

VI. Summa 25 × 660 + 57,"41

Summae itaque harum variationum maximarum ſunt

$$\begin{aligned}
\text{I} &= 30 \times 660'' + 121,''93\\
\text{II} &= 30 \times 660 + 83,95\\
\text{III} &= 30 \times 660 + 46,11\\
\text{IV} &= 30 \times 660 - 55,55\\
\text{V} &= 30 \times 660 + 51,81\\
\text{VI} &= 25 \times 660 + 57,41
\end{aligned}$$

$$\begin{aligned}
\text{Summa} \ldots &= 175 \times 660'' + 305,''66\\
\text{Medium} \ldots &= \ldots 660 + 1,7466\\
\text{itaque motus per 33 annos} &+ 661,7466\\
\text{motus annuus} &= \ldots\ldots + 20,''0529
\end{aligned}$$

2) Eodem plane modo declinationes Cl. *BARRY* cum declinationibus Cl. *MAYERI* collatae ſunt, quas plenas et abſolutas hic quoque referre ſupervacuum habemus; ſufficiat notaſſe, motum hunc annuum, ex hac comparatione enatum, a nobis 19,''9524 compertum fuiſſe.

β) 3) et 4) Ex obſervato motu in aſcenſione recta non aeque facili, quam ſupra, negotio praeceſſio annua repetenda erat. Conſultiſſimum itaque nobis viſum eſt, calculum hunc, per viam, quam dicimus *indirectam*, inire; ad quam aſſequendam hac uſi ſumus methodo. Aſſumpta praeceſſione annua in aſcenſionem rectam qualibet, ad veritatem maxime accedente, *BRADLEJI* et *MAYERI* aſcenſiones rectae ad epocham catalogi noſtri 1800 reductae ſunt, ſupputata proin pro quavis fixa correctiuncula, quae ex imminuta praeceſſionis parte variabili 20,''05 in aſcenſionem rectam (e. g. ex imminutione 0,''03 cof Ⓡ *) oriri poteſt; unde poſtremo variatio competens ex mutata praeceſſionis quantitate qualibet, producta per unicam analogiam proportionalem, derivari, et ſic elicita determinatio ultima corrigi potuit. Hoc pacto ſequentes prodierunt differentiae inter noſtras et Cl. *BRADLEJI* et *MAYERI* aſcenſiones rectas, quibus earundem correctiunculae, ex variata praeceſſionis parte ortae, adjectae ſunt, ut praeſens tabula exhibet.

Aſcenſiones rectae Cl. MAYERI (1756) et Cl. BRADLEJI (1760) cum aſcenſionibus rectis noſtris (1800) comparatae.

Signum + indicat, AR. MAYERI vel BRADLEJI augendas, ſignum — minuendas eſſe.

Nomen Stellarum	Differentia cum *Mayer.* +	Differentia cum *Mayer.* —	Differentia cum *Bradley.* +	Differentia cum *Bradley.* —	Correctio partis variabilis	Nomen Stellarum	Differentia cum *Mayer.* +	Differentia cum *Mayer.* —	Differentia cum *Bradley.* +	Differentia cum *Bradley.* —	Correctio partis variabilis
5 γ ♈	2″	..	..	3″	0,″17	50 ω² ♉	2″	..	..	..	0,″26
6 β ♈	5	..	..	3	0, 19	52 φ ♉	..	1″	..	4″	0, 54
8 ι ♈	6	..	..	3	0, 16	54 γ ♉	6	..	..	8	0, 29
12 κ ♈	7	..	..	..	0, 22	59 ♉	7	..	..	1	0, 50
13 α ♈	8	..	2″	..	0, 24	61 δ² ♉	6	..	..	2	0, 32
17 η ♈	9	..	..	..	0, 22	64 δ³ ♉	5	..	0	0	0, 32
19 ♈	4	..	..	4	0, 16	65 κ¹ ♉	..	..	..	1	0, 43
22 θ² ♈	11	..	3	..	0, 21	67 κ² ♉	..	..	5″	..	0, 43
24 ξ ♈	..	4″	..	..	0, 11	68 δ³ ♉	..	16	..	2	0, 34
32 ν ♈	6	..	..	..	0, 27	69 υ¹ ♉	12	..	3	..	0, 44
34 μ ♈	10	..	..	..	0, 25	73 π ♉	8	..	..	..	0, 27
37 ο ♈	4	..	..	..	0, 19	74 ᵘ ♉	5	..	2	..	0, 36
42 π ♈	8	..	..	..	0, 23	76 ♉	0	0	..	..	0, 27
43 σ ♈	3	..	..	..	0, 19	77 θ¹ ♉	4	..	3	..	0, 30
45 ?² ♈	5	..	..	..	0, 25	78 θ² ♉	3	..	3	.	0, 30
48 ε ♈	3	..	..	4	0, 30	86 ρ ♉	..	1	..	..	0, 28
57 δ ♈	8	..	5	..	0, 29	87 α ♉	1	..	..	1	0, 31
58 ζ ♈	2	..	..	7	0, 32	94 τ ♉	..	1	..	3	0, 46
63 τ² ♈	11	..	2	..	0, 32	97 i ♉	4	..	5	..	0, 37
2 ξ ♉	..	5	..	..	0, 16	102 ι ♉	0	0	..	8	0, 44
4 s ♉	..	3	..	..	0, 17	105 ♉	..	..	..	3	0, 46
5 f ♉	..	3	..	..	0, 20	109 n ♉	5	..	..	..	0, 46
6 t ♉	3	..	..	..	0, 14	112 β ♉	2	..	..	1	0, 63
15 η ♉	3	..	..	2	0, 42	114 ♉	2	..	..	3	0, 47
27 f ♉	2	..	..	..	0, 42	123 ζ ♉	1	..	..	2	0, 45
30 e ♉	..	6	..	..	0, 18	125 ♉	..	1	6	..	0, 57
35 λ ♉	..	5	..	..	0, 21	130 ♉	2	..	..	..	0, 37
37 A ♉	5	..	13	..	0, 28	132 ♉	2	..	..	..	0, 54
42 ψ ♉	5	..	..	..	0, 55	136 ♉	..	..	0	0	0, 62
43 ω¹ ♉	10	..	..	..	0, 36	139 ♉	..	2	..	..	0, 58
44 p ♉	2	..	..	..	0, 50	1 π ♊	..	3	0	0	0, 51
summa	142	26	25	26		summa	77	25	27	39	
Summa observat. differ. et correct.	31 { +116″ / 7,″88		12 { — 1″ / 3,″06			Summa observat. differ. et correct.	27 { + 52″ / 10,″95		23 { — 12″ / 9,″86		

Aſcenſiones rectae Cl. MAYERI (1756) et Cl. BRADLEJI (1760) cum aſcenſionibus rectis noſtris (1800) comparatae.

Signum + indicat, AR. MAYERI vel BRADLEJI augendas, ſignum — minuendas eſſe.

Nomen Stellarum	Differentia cum *Mayer.* +	Differentia cum *Mayer.* —	Differentia cum *Bradley.* +	Differentia cum *Bradley.* —	Correctio partis variabilis	Nomen Stellarum	Differentia cum *Mayer.* +	Differentia cum *Mayer.* —	Differentia cum *Bradley.* +	Differentia cum *Bradley.* —	Correctio partis variabilis
7 η □	..	3″	..	7″	0,″50	74 f □	..	1″	..	8″	0,″36
11 □	..	3	..	..	0, 58	75 σ □	19″	..	..	..	0, 62
13 μ □	8″	..	1″	..	0, 56	76 c □	..	2	..	..	0, 55
18 ν □	..	2	..	..	0, 45	77 κ □	..	1	..	5	0, 57
21 □	2	..	..	..	0, 38	81 g □	..	6	..	14	0, 38
24 γ □	2	..	..	3	0, 36	83 φ □	..	5	..	2	0, 56
26 □	0	0	..	4	0, 38	85 l □	..	4	..	..	0, 40
27 ε □	1	..	..	3	0, 56	.. χ □	..	5	..	..	0, 57
28 □	..	..	..	9	0, 66	2 ω^{2} ♋	2	..	..	..	0, 58
30 ξ^{2} □	0	0	..	..	0, 27	8 ♋	..	12	..	..	0, 26
31 ξ^{2} □	..	7	..	..	0, 27	10 μ^{2} ♋	..	5	..	..	0, 43
36 d □	..	4	..	..	0, 54	14 ψ^{2} ♋	2	..	..	6	0, 57
38 e □	..	3	..	..	0, 27	15 ψ^{3} ♋	..	6	..	..	0, 60
42 ω^{2} □	0	0	..	..	0, 60	16 ζ ♋	..	1	..	..	0, 34
43 ζ □	..	1	..	6	0, 44	17 β ♋	..	4	..	1	0, 18
45 ο □	..	2	..	..	0, 34	18 χ ♋	..	1	..	..	0, 54
46 τ □	..	3	..	..	0, 68	19 λ ♋	..	1	..	..	0, 47
48 m □	1	..	..	..	0, 59	20 d^{1} ♋	..	13	..	..	0, 34
51 λ^{1} □	..	5	..	5	0, 34	25 d^{2} ♋	..	9	..	..	0, 32
52 n □	0	0	..	..	0, 55	30 υ^{3} ♋	..	1	..	..	0, 46
54 λ^{2} □	..	1	..	5	0, 33	31 θ ♋	0	0	..	9	0, 34
55 δ □	1	..	3	..	0, 47	32 υ^{4} ♋	..	2	..	..	0, 45
56 q □	0	0	..	6	0, 43	33 η ♋	3	..	6″	..	0, 38
57 A □	..	6	..	..	0, 55	36 c^{1} ♋	..	1	..	..	0, 18
60 ι □	..	6	..	14	0, 61	38 o ♋	..	6	..	..	0, 36
62 s □	6	..	..	..	0, 71	39 ♋	2	..	..	..	0, 36
63 p □	..	3	..	8	0, 57	43 γ ♋	..	7	..	11	0, 38
64 b^{1} □	..	5	..	..	0, 61	45 A^{1} ♋	..	3	..	..	0, 22
α 66 □	..	2	..	11	0, 71	47 δ ♋	..	1	..	6	0, 32
68 k □	..	2	..	..	0, 33	48 i^{1} ♋	..	5	..	..	0, 59
69 ι □	..	2	..	5	0, 58	49 b ♋	..	3	..	..	0, 18
summa	21	60	4	86		summa	28	105	6	62	
Summa observat differ. et correct.	30 { — 39″ / 14,″56		15 { — 82″ / 7,″50			Summa observat differ. et correct.	31 { — 77″ / 12,″86		10 { — 56″ / 4,″04		

Aſcenſiones rectae Cl. MAYERI (1756) *et Cl.* BRADLEJI (1760) *cum aſcenſionibus rectis noſtris* (1800) *comparatae.*

Signum + indicat, AR. MAYERI vel BRADLEJI augendas, ſignum — minuendas eſſe.

Nomen Stellarum	Differentia cum *Mayer.* +	Differentia cum *Mayer.* —	Differentia cum *Bradley.* +	Differentia cum *Bradley.* —	Correctio partis variabilis	Nomen Stellarum	Differentia cum *Mayer.* +	Differentia cum *Mayer.* —	Differentia cum *Bradley.* +	Differentia cum *Bradley.* —	Correctio partis variabilis
50 A² ♋	. .	4″	. .	. .	0,″21	59 c ♌	. .	11″	. .	9″	0,″04
60 α¹ ♋	2″	. .	. .	2″	0, 20	63 χ ♌	. .	21	. .	19	0, 05
62 o³ ♋	1	. .	. .	. .	0, 26	68 δ ♌	6″	. .	3″	. .	0, 11
65 α² ♋	1	. .	. .	2	0, 20	70 θ ♌	. .	6	. .	10	0, 09
69 ν ♋	0	0	. .	. .	0, 30	73 n ♌	. .	4	. .	. .	0, 07
76 κ ♋	0	0	0″	0	0, 19	74 φ ♌	. .	20	. .	. .	. .
77 ξ ♋	. .	1	. .	10	0, 36	75 q ♌	. .	. .	. .	2	. .
1 κ ♌	. .	3	. .	. .	0, 41	77 σ ♌	. .	20	. .	8	0, 03
2 ω ♌	. .	5	. .	9	0, 14	78 ι ♌	. .	2	. .	. .	0, 05
4 λ ♌	. .	1	. .	. .	0, 34	79 r ♌	. .	16	. .	5	0, 01
5 ξ ♌	. .	7	. .	10	0, 17	84 τ ♌	. .	14	. .	2	. .
6 h ♌	. .	8	. .	. .	0, 14	87 e ♌	. .	3	2	. .	. .
8 ♌	. .	2	. .	. .	0, 23	91 υ ♌	. .	12	. .	3	. .
10 ♌	. .	14	. .	20	0, 10	94 β ♌	. .	10	. .	14	0, 03
14 o ♌	. .	12	. .	13	0, 14	1 ω ♍	. .	12	. .	. .	0, 03
16 ψ ♌	. .	2	. .	. .	0, 19	2 ξ¹ ♍	. .	8	. .	5	0, 02
17 s ♌	4	. .	. .	4	0, 33	3 ν ♍	. .	17	. .	3	0, 02
27 ν ♌	. .	6	8	. .	0, 16	6 A² ♍	. .	2	. .	. .	0, 01
29 π ♌	. .	6	. .	10	0, 10	7 b ♍	. .	10	. .	. .	. .
30 η ♌	2	. .	. .	5	0, 19	8 π ♍	. .	7	1	. .	. .
31 A ♌	. .	9	. .	12	0, 12	9 o ♍	. .	21	. .	. .	. .
41 γ ♌	15	. .	7	. .	0, 21	11 s ♍	. .	12	. .	. .	. .
44 ♌	. .	10	. .	. .	0, 09	15 η ♍	. .	15	. .	6	. .
46 i ♌	. .	3	. .	. .	0, 14	16 c ♍	. .	22	. .	18	. .
47 ρ² ♌	3	. .	5	. .	0, 09	21 q ♍	. .	14	. .	. .	. .
48 ♌	. .	9	. .	8	0, 07	26 χ ♍	. .	14	. .	14	. .
52 k ♌	. .	8	. .	. .	0, 12	29 γ ♍	. .	32	. .	30	. .
53 l ♌	. .	7	. .	. .	0, 08	38 ♍	. .	27	. .	. .	. .
55 ♌	. .	. .	0	0	. .	40 ψ ♍	. .	11	. .	10	. .
56 ♌	. .	. .	. .	2	0, 05	43 δ ♍	. .	31	. .	25	. .
58 d ♌	. .	13	. .	12	0, 03	44 κ ♍	. .	18	. .	. .	. .
summa	28	130	20	119		summa	6	412	6	183	
Summa obſervat. differ. et correct.	29 { —102″ / 5,″31		19 { — 99″ / 2,″85			Summa obſervat. differ. et correct.	30 { —406″ / 0,″56		20 { —177″ / 0,″40		

Aſcenſiones rectae Cl. MAYERI (1756) et Cl. BRADLEJI (1760) cum aſcenſionibus rectis noſtris (1800) comparatae.

Signum + indicat, AR. MAYERI vel BRADLEJI augendas, ſignum — minuendas eſſe.

Nomen Stellarum	Differentia cum *Mayer.* +	Differentia cum *Mayer.* —	Differentia cum *Bradley* +	Differentia cum *Bradley* —	Correctio partis variabilis	Nomen Stellarum	Differentia cum *Mayer.* +	Differentia cum *Mayer.* —	Differentia cum *Bradley* +	Differentia cum *Bradley* —	Correctio partis variabilis
47 ε ♏	..	19″	..	21″	..	35 ζ[24] ♎	..	10″	..	6″	0,″26
49 g ♏	..	11	..	10	0,″05	38 γ ♎	..	4	..	2	0, 23
51 θ ♏	..	19	..	10	0, 02	39 ♎	..	8	..	..	0, 48
53 ♏	..	3	..	..	0, 08	42 ♎	..	11	..	12	0, 40
61 ♏	..	24	..	..	0, 11	43 κ ♎	..	14	..	18	0, 33
67 α ♏	..	10	..	8	0, 07	44 η ♎	..	12	..	..	0, 26
68 i ♏	..	13	..	7	0, 08	45 λ ♎	..	10	..	11	0, 35
69 ♏	..	6	..	..	0, 10	46 θ ♎	..	3	..	..	0, 27
74 l[2] ♏	..	18	..	11	0, 04	48 ψ ♎	..	12	..	16	0, 24
76 h ♏	..	15	..	..	0, 07	51 ξ[3] ♎	..	13	..	..	0, 19
79 ζ ♏	..	27	..	..	..	1 b ♏	..	7	..	..	0, 46
82 m ♏	..	16	..	13	0, 06	2 A[1] ♏	..	11	..	8	0, 45
89 ♏	..	16	..	..	0, 15	5 ρ ♏	..	7	..	..	0, 54
90 p ♏	..	21	..	..	..	6 π ♏	..	1	..	9	0, 54
98 κ ♏	..	14	..	3	0, 10	7 δ ♏	..	8	..	7	0, 41
99 ι ♏	..	17	..	..	0, 05	8 β ♏	..	8	..	9	0, 36
100 λ ♏	..	12	..	8	0, 14	9 ω[1] ♏	..	8	..	8	0, 37
107 μ ♏	..	16	..	..	0, 06	10 ω[2] ♏	..	9	..	9	0, 37
7 μ ♎	..	12	..	10	0, 18	12 c[1] ♏	..	6	..	..	0, 55
8 α[1] ♎	..	10	..	..	0, 21	14 ν ♏	..	13	..	12	0, 36
9 α[2] ♎	..	13	..	12	0, 21	20 σ ♏	..	5	..	6	0, 56
13 ξ[1] ♎	..	12	..	..	0, 15	21 α ♏	..	4	..	7	0, 59
15 ξ[2] ♎	..	14	..	11	0, 15	23 τ ♏	..	5	..	10	0, 57
19 δ ♎	..	19	..	..	0, 11	24 m ♏	..	13	..	..	0, 34
20 γ ♎	..	10	..	..	0, 37	28 ♏	..	10	..	..	0, 45
21 ν[1] ♎	..	12	..	14	0, 23	35 λ ♏	..	13	..	..	0, 85
24 ι[2] ♎	..	14	..	13	0, 29	3 p ♐	..	3	..	7	0, 62
27 β ♎	..	16	..	13	0, 13	4 b ♐	..	5	..	7	0, 59
29 o[1] ♎	..	6	..	..	0, 23	7 a ♐	..	7	..	..	0, 54
31 ε ♎	..	16	..	..	0, 15	10 γ ♐	..	6	..	7	0, 70
32 ζ[1] ♎	..	8	..	..	0, 26	13 μ[1] ♐	..	10	..	5	0, 46
summa	..	439	..	164		summa	..	256	..	176	
Summa observat. differ. et correct.	31 { —439″ / 3,″85		15 { —164″ / 1,″75			Summa observat. differ. et correct.	31 { —256″ / 13,″69		20 { —176″ / 8,″76		

Aſcenſiones rectae Cl. MAYERI (1756) et Cl. BRADLEJI (1760) cum aſcenſionibus rectis noſtris (1800) comparatae.

Signum + indicat, AR. MAYERI vel BRADLEJI augendas, ſignum — minuendas eſſe.

Nomen Stellarum	Differentia cum *Mayer.* +	Differentia cum *Mayer.* —	Differentia cum *Bradley.* +	Differentia cum *Bradley.* —	Correctio partis variabilis	Nomen Stellarum	Diff-rentia cum *Mayer.* +	Diff-rentia cum *Mayer.* —	Differentia cum *Bradley.* +	Differentia cum *Bradley.* —	Correctio partis variabilis
15 μ^2 ♓	..	9″	..	10″	0,″46	6 α^2 ♑	..	3″	..	5″	0,″24
19 δ ♓	..	1	..	7	0, 69	7 σ ♑	..	10	..	1	0, 37
20 ε ♓	..	7	..	13	0, 82	8 ν ♑	..	6	..	..	0, 24
21 ♓	..	7	..	11	0, 45	9 β ♑	..	7	..	4	0, 27
22 λ ♓	..	8	..	19	0, 57	10 π ♑	..	9	..	..	0, 34
27 Φ ♓	..	7	..	8	0, 61	11 ρ ♑	..	6	..	7	0, 33
29 ♓	..	9	..	..	0, 45	12 o ♑	..	9	..	..	0, 35
32 ν^1 ♓	..	10	..	11	0, 50	14 τ ♑	..	7	..	..	0, 27
34 σ ♓	27′	..	..	11	0, 59	15 υ ♑	..	9	..	2	0, 32
35 ν^2 ♓	..	6	..	1	0, 56	16 ψ ♑	..	12	..	..	0, 46
37 ξ^2 ♓	..	8	..	7	0, 46	18 ω ♑	..	9	..	..	0, 54
38 ζ ♓	3	..	..	3	0, 68	19 ♑	..	12	..	14	0, 31
39 o ♓	..	5	..	6	0, 47	22 η ♑	..	13	..	11	0, 33
40 τ ♓	..	9	..	9	0, 62	23 θ ♑	..	4	..	4	0, 27
41 π ♓	..	11	..	10	0, 46	24 A ♑	..	12	..	..	0, 42
42 ψ ♓	..	8	..	9	0, 55	25 χ^2 ♑	..	12	..	7	0, 35
43 d ♓	..	13	..	8	0, 40	28 Φ ♑	..	11	..	11	0, 33
44 ρ^1 ♓	..	10	..	..	0, 38	30 ♑	..	9	..	..	0, 27
46 υ ♓	..	10	..	..	0, 34	32 ι ♑	..	10	..	6	0, 26
47 χ^1 ♓	..	10	..	8	0, 53	34 ζ ♑	..	14	3″	..	0, 34
52 h^2 ♓	..	11	..	..	0, 53	36 b ♑	..	7	..	5	0, 33
54 e^2 ♓	..	4	..	..	0, 33	39 ε ♑	..	17	..	13	0, 28
56 f ♓	..	17	..	9	0, 41	40 γ ♑	..	3	0	0	0, 24
58 ω ♓	..	1	6″	..	0, 55	42 d^1 ♑	..	13	..	..	0, 20
59 b ♓	..	10	..	10	0, 56	43 κ ♑	..	8	..	6	0, 26
60 A ♓	..	13	..	12	0, 54	46 c^1 ♑	..	11	..	..	0, 13
61 g ♓	..	8	..	..	0, 31	48 λ ♑	..	11	..	9	0, 15
62 c ♓	..	9	..	..	0, 57	49 δ ♑	..	2	3	..	0, 21
63 ♓	..	4	..	..	0, 27	51 μ ♑	1″	..	5	..	0, 18
1 ♑	..	9	..	..	0, 24	2 ε ♒	..	3	..	6	0, 17
5 α^2 ♑	..	6	..	6	0, 24	6 μ ♒	..	1	..	3	0, 16
summa	30	240	6	188		summa	1	260	11	114	
Summa observat. differ. et correct.	31 { —210″ / 15,″14		22 { —182″ / 11,″72			Summa observat. differ. et correct.	31 { —259″ / 8,″92		21 { —103″ / 5,″79		

Aſcenſiones rectae Cl. MAYERI (1756) et Cl. BRADLEJI (1760) cum aſcenſionibus rectis noſtris (1800) comparatae.

Signum + indicat, AR. MAYERI vel BRADLEJI augendas, ſignum — minuendas eſſe.

Nomen Stellarum	Differentia cum *Mayer.* +	Differentia cum *Mayer.* —	Differentia cum *Bradley.* +	Differentia cum *Bradley.* —	Correctio partis variabilis	Nomen Stellarum	Differentia cum *Mayer.* +	Differentia cum *Mayer.* —	Differentia cum *Bradley.* +	Differentia cum *Bradley.* —	Correctio partis variabilis
13 ν ♒	..	2″	..	2″	0,″18	5 A ♓	..	5″	..	..	..
18 ♒	..	6	..	..	0, 20	6 γ ♓	15″	..	..	..	..
22 β ♒	..	10	..	7	0, 09	7 b ♓	..	7	..	..	..
23 ξ ♒	..	7	..	4	0, 11	8 κ^1 ♓	..	10	..	6″	..
31 ο ♒	..	12	..	7	0, 03	10 θ ♓	..	18	..	..	..
33 ι ♒	..	7	..	6	0, 16	12 ♓	..	15	..	..	..
34 α ♒	..	20	..	12	0, 01	17 ι ♓	2	..	..	..	..
35 ♒	..	..	..	9	0, 22	18 λ ♓	1	..	6″	..	..
38 e ♒	..	8	..	..	0, 13	19 ♓	..	14	..	10	..
43 θ ♒	..	5	..	3	0, 09	21 ♓	..	15	..	..	..
46 ρ ♒	..	11	..	5	0, 08	26 ♓	..	6	..	..	..
48 γ ♒	..	8	..	2	0, 02	28 ω ♓	..	7	..	3	..
51 ♒	..	12	..	..	0, 05	29 ♓	..	13	..	6	..
52 π ♒	..	..	..	3	..	30 ♓	..	11	..	7	..
55 ζ ♒	..	7	3″	..	..	32 ♓	..	15	..	..	..
57 σ ♒	..	7	..	4	0, 10	33 ♓	..	15	..	8	..
59 υ ♒	..	..	3	..	0, 20	41 d ♓	..	10	15	..	..
62 η ♒	..	10	..	2	..	51 ♓	..	11	..	..	..
63 κ ♒	..	6	..	5	0, 04	63 δ ♓	..	8	..	..	..
69 τ^1 ♒	..	6	..	11	0, 11	71 ε ♓	..	14	..	13	..
71 τ^2 ♒	..	11	..	10	0, 11	80 e ♓	..	21	..	20	..
73 λ ♒	..	9	..	10	0, 06	86 ζ ♓	..	9	..	4	..
76 δ ♒	..	11	..	11	0, 12	89 f ♓	..	1	..	..	..
Fomah	5″	..	5	..	0, 22	93 ρ^1 ♓	..	2	..	..	0,″12
83 h^1 ♒	..	5	0	0	0, 05	98 μ ♓	7	..	2	..	0, 04
90 φ ♒	..	10	..	6	0, 04	99 η ♓	..	1	3	..	0, 10
91 ψ^1 ♒	4	..	7	..	0, 05	102 π ♓	..	8	..	13	0, 08
92 χ ♒	..	13	..	10	0, 04	106 ν ♓	..	10	..	2	0, 04
93 ψ^2 ♒	..	12	..	8	0, 05	110 ο ♓	..	6	..	2	0, 07
95 ψ^3 ♒	..	10	..	5	0, 05	113 α ♓	..	13	7	..	0, 02
4 β ♓	..	13	..	8	..						
summa	9	238	18	150		summa	25	265	33	94	
Summa observat. differ. et correct.	28 { — 229″ / 2,″19		28 { — 132″ / 2,″23			Summa observat. differ. et correct.	30 { — 240″ / 0,″47		17 { — 61″ / 0,″35		

Numerus observationum	Different. cum MAYER.	Correctio partis variabilis	Numerus observationum	Different. cum BRADLEY.	Correctio partis variabilis
31	+ 116″	7,″88	12	— 1″	3,″06
27	+ 52	10, 95	23	— 12	9, 86
30	— 39	14, 56	15	— 82	7, 50
31	— 77	12, 86	10	— 56	4, 04
29	— 102	5, 31	19	— 99	2, 85
30	— 406	0, 56	20	— 177	0, 40
31	— 439	3, 85	15	— 164	1, 75
31	— 256	13, 69	20	— 176	8, 76
31	— 210	15, 14	22	— 182	11, 72
31	— 259	8, 92	21	— 103	5, 70
28	— 229	2, 19	28	— 132	2, 23
30	— 240	0, 47	17	— 61	0, 35
360	— 2089″	96,″38	222	— 1245″	58,″22
Medium	—5,″8028	0,″2677	Medium	—5,″6081	0,″2623

motus annuus —0,″1319 0,″0061 motus annuus — 0,″1402 0,″0066

Corr. part. var. +0, 0061 ..... corr. part. var. + 0, 0066

—0,″1258 ..... — 0,″1336

pars conſtans aſſumpta . . +46,″02 ..... pars conſtans aſſumpta . . +46,″02

conſt. ver. in Æ 45,″8942 ..... conſt. ver. in Æ 45,″8864

ex quo apparet, correctionem majorem illa aſſumpta 0,″03 adhibendam fuiſſe; quapropter adhuc correctiuncula 0,″0034 adjicienda eſt. Itaque pars conſtans vera ſecundum

Cl. MAYERVM .... =45,″8976 ſec. BRADLEJVM = 45,″8898

ex planetar. perturb. in aequat. +0, 2017 ..... + 0, 2017

46,″0993 ..... 46,″0915

Log. 46,″0993 = 1,6636943 ..... 46,″0915 = 1,6636209

Log. coſ. obl. eclipt. pro 1778 = 23° 28′ 8″ = 9,9625002 1780 = 23° 28′ 7″ = 9,9625011

1,7011941 1,7011198

Praeceſſio luni-ſolaris in longitudinem 50,″2567 ..... 50,″2481

ex planetarum perturbatione in eclipt. — 0, 1849 ..... — 0, 1849

praeceſſio totalis in longitudinem . . . 50, 0718 ..... 50,″0632

Ex declinationibus comparatis habemus

Variation. maxim. in decl. ſec.

Cl. MAYER. 19,″9524 log. = 1,2999951 ſec. Cl. BRADL. log. 20,″0529 = 1,3021772

Log. ſin. obl. eclipt. pro

1774,5 = 23° 28′ 10″ ..... = 9,6001666 1776,5 = 23° 28′ 9″ .... = 9,6001617

1,6998285 1,7020155

praeceſſ. luni-ſolaris in longit. 50,″0989 ..... 50,″3519

ex planetar. perturb. in eclipt. — 0, 1849 ..... — 0, 1849

praeceſſ. totalis in longit. . . . 49,″9140 ..... 50,″1670

Congeſtis

Congeſtis jam disquiſitionibus omnibus prodit quantitas praeceſſionis annuae in longitudinem

1) ex *BRADLEJI* et *BARRY* declinationibus . . . 50,"1670
2) ex *MAYERI* et *BARRY* declinationibus 49, 9140
3) ex *BRADLEJI* et noſtris aſcenſionibus rectis . . . 50, 0632
4) ex *MAYERI* et noſtris aſcenſionibus rectis 50, 0718
Quantitas media eſt . . . . . 50,"0540

quam pro praeceſſione media in praeſenti ſeculo aſſumpſimus, et in qua tamquam fundamento omnes formulae, et tabulae noſtrae, ſupra relatae, conſtructae ſunt.

Cl. *DELAMBRE* quantitatem hanc alia prorſus via elicitam deprehendit = 50,"10*); Cl. *PIAZZI* nuperrime in opere ſuo non ſatis laudando **) eandem invenit = 50,"110. Summus conſenſus trium harum inveſtigationum multum huic quantitati affert auctoritatis et fidei, et ſententiam noſtram de recentiorum obſervationum primatu in hac re confirmat. Sunt, quibus in praeceſſionis aequinoctiorum motu quidam totius ſyſtematis ſolaris motus ſuboleat; ſed de his opinationibus non eſt hic differendi locus, et materiem hanc ſubtiliſſimae indaginis nepotibus relinquendam eſſe exiſtimamus.

Extant fixarum catalogi varii et ampliſſimi, prout Cl. virorum *BRADLEY*, *DE LA CAILLE*, *MAYER*, *DE LA LANDE*, *WOLLASTON*, *PIAZZI* etc. in quibus variationes annuae, pro diverſis a quovis aſtronomo pro ſuo arbitrio aſſumptis praeceſſionis determinationibus ſupputatae, inveniuntur. Labor hic pro temere effuſo et vano habeatur, quoniam nunc aliis et meliusculis utamur datis; ſed attentius perpendenti pateſcet ex iisdem valoribus, pro aſſumpta quavis alia praeceſſione, aequos depromi poſſe valores, modo debitae applicentur correctiunculae; quae cum exiguae admodum ſint, facillimo calculo perfici et omni jure novo et longiori calculo per formulam ſubſtitui poſſunt.

Sint e. g. tabulae generales praeceſſionis Cl. *DELAMBRE* ſupra commemoratae pro praeceſſione annua in longitudinem 50,"25 conſtructae, ad quantitatem noſtram 50,"0540 accommodandae.

*) Conn. des tems, Année 1793, pag. 273.

**) Praecipuarum ſtellarum inerrantium poſitiones mediae ineunte ſeculo XIX ex obſervationibus habitis in ſpecula Panormitana ab anno 1792 ad annum 1802 — Panormi, MDCCCIII typis regiis; in praefatione, pag. XXII.

Pars variabilis hujus praeceſſionis in Æ et in decl.

ſec. Cl. *DELAMBRE* eſt . . . . . = 20,"084

eadem ſecundum noſtram determinationem . . . . = 20, 01109

Differentia = 0, 07291

Differentia haec pars $\frac{1}{277}$ totius quantitatis eſt, qua valor ex tabulis Cl. *DELAMBRE* depromptus, id eſt, variatio in declinatione ſemper minuenda eſt.

Porro: pars conſtans praeceſſionis in Æ ſecundum

Cl. *DELAMBRE* eſt . . . . . = 46,"0619

ex noſtra determinatione vero . . . . . = 45,·87992

Differentia = 0,"18198

quae differentia $\frac{1}{253}$ totius valoris eſt; ſed cum variatio in aſcenſione recta ex utraque praeceſſionis parte tum conſtanti, tum variabili conflata ſit, correctio media pars $\frac{1}{506}$ totius variationis erit, qua praeceſſio in aſcenſionem rectam ſemper mulctanda eſt.

In paradigmate loco citato pag. 213 allato, Cl. *DELAMBRE* variationem aſcenſionis rectae Capellae pro 100 annis ex ſuis tabulis invenit 1° 49' 47,"9; pars itaque $\frac{1}{506}$ hujus quantitatis eſt 24,"95. Adeoque variatio haec pro ſuppoſita noſtra praeceſſione coaequata erit 1° 49' 47,"9 — 24,"95 = 1° 49' 22,"95, quam ſupra pag. 40 ex calculo noſtro rigoroſo per formulam inſtituto deprehendimus 1° 49' 22,"397. Differentia exilis, quae ſupereſt, ex neglectis quibusdam partibus proportionalibus ortum trahit. Sic et variatio in declinatione ſecundum Cl. *DELAMBRE* reperta eſt 9' 0,"8, cujus pars $\frac{1}{277}$ = 0,"196. Idcoque variatio haec ad mentem hypotheſis noſtrae eſt 9' 0,"8 — 1,"967 = 8' 58,"833; per formulam vero eandem valorem ſubduximus 8' 58,"640.

Dum tabulae noſtrae aberrationis et nutationis ſpeciales ſub prelo verſabantur, disquiſitio haec in aequinoctiorum praeceſſionis quantitatem a nobis ſuſcepta nondum erat. Stellarum itaque variationes, in aſcenſione recta et in declinatione in fronte cujusvis plagulae expoſitae, Cl. *WOLLASTONII* catalogo *) debentur. Si vero eaedem nunc ad normam praeceſſionis noſtrae exigantur, omnes $\frac{1}{221}$ totius partis diminuendae ſunt.

*) A ſpecimen of a general aſtronomical catalogue, arranged in zones of north polar diſtance, and adapted to Jan. 1. 1790 etc. By Francis Wollaſton, F. R. S. London, MDCCLXXXIX.

Condiderunt aſtronomi tabulas generales, ex quibus effectus praeceſſionis aequinoctiorum in aſcenſionem rectam et in declinationem illico excerpi poſſunt, et quarum commodiſſimae illae ſupra jam commemoratae Cl. *DELAMBRE* ſunt. Sed tabulae hae cunctae nimis prolixae et in magnum paginarum ſpatium diſtenduntur, nec tamen calculi trigonometrici neceſſitatem tollunt. Variatio in declinatione facile in unicam tabulam conjici poteſt, cum illa tantummodo in coſinu aſcenſionis rectae nitatur; ſed majoris videtur negotii, variationem in aſcenſione recta per unicam exhibere tabulam, cum illa ſimul a ſinu aſcenſionis rectae et a tangente declinationis dependeat. Ea propter Cl. *MASKELYNE* hanc tantum partem, quae in ſinum aſcenſionis rectae ducitur, in unicam redegit tabulam, relicto calculatori negotio, quantitatem hanc per tangentem declinationis multiplicandi. Ad ſublevandam hanc operam Cl. *DELAMBRE* tabulas has ita confecit, ut duobus argumentis, uno cum aſcenſione recta, altero cum declinatione ſideris ſimul ingrediantur. Sed norunt aſtronomi apprime, quantum afferat faſtidii, tabulis hujus conſtructionis propter duplices partes proportionales uti.

Variationes vero hae tum in aſcenſione recta, tum in declinatione per unam et eandem repraeſentari poſſunt tabellam, adhibito ſcilicet artificio anguli ſubſidiarii, quo ſupra jam pro variatione in longitudine ſiderum uſi ſumus.

Nam cum pro angulo hoc auxiliario tang. $= 10 \cos \alpha$ aſſumſerimus, pars variabilis praeceſſionis in aſcenſione recta erit $=$

$$\frac{10}{2} \times 20,''01109 \ (\sin \text{Æ} \cos \alpha) =$$

$$= 5 \times [20,''01109 \cos (\text{Æ} + \alpha - 90°) + 20,''01109 \cos (\text{Æ} - \alpha - 90°)]$$

Ergo ad ſupputandas variationes praeceſſionis ſive in aſcenſione recta, ſive in declinatione, unica tantummodo egemus tabella, nimirum illa, per formulam $20,''01109 \cos$ Æ conſtructa, quam hoc loco in calculatorum commodum exhibemus.

TABVLA

praeceſſionis annuae in Aſcenſionem rectam et in Declinationem.

Arg. I } pro Æ. = Æ* + α — 3ˢ
Arg. II } = Æ* — α — 3ˢ

Argumentum pro Declinatione = Æ*.

Arg.	0° 180° + —	Differ. pro 1′	30° 210° + —	Differ. pro 1′	60° 240° + —	Differ. pro 1′	Arg.
0°	20,″0111	0,″00005	17,″3301	0,″00295	10,″0056	0,″00507	30°
1	20, 0084	0, 00015	17, 1528	0, 00304	9, 7016	0, 00512	29
2	19, 9989	0, 00025	16, 9704	0, 00313	9, 3946	0, 00516	28
3	19, 9837	0, 00035	16, 7827	0, 00321	9, 0848	0, 00521	27
4	19, 9624	0, 00046	16, 5899	0, 00330	8, 7723	0, 00525	26
5	19, 9350	0, 00056	16, 3921	0, 00338	8, 4571	0, 00530	25
6	19, 9015	0, 00066	16, 1893	0, 00346	8, 1393	0, 00534	24
7	19, 8619	0, 00076	15, 9816	0, 00354	7, 8190	0, 00538	23
8	19, 8163	0, 00086	15, 7691	0, 00362	7, 4963	0, 00542	22
9	19, 7647	0, 00095	15, 5517	0, 00370	7, 1713	0, 00545	21
10	19, 7070	0, 00106	15, 3296	0, 00378	6, 8442	0, 00548	20
11	19, 6434	0, 00116	15, 1026	0, 00386	6, 5150	0, 00552	19
12	19, 5738	0, 00126	14, 8711	0, 00393	6, 1838	0, 00555	18
13	19, 4982	0, 00136	14, 6352	0, 00401	5, 8507	0, 00558	17
14	19, 4167	0, 00146	14, 3948	0, 00408	5, 5158	0, 00561	16
15	19, 3292	0, 00156	14, 1499	0, 00415	5, 1792	0, 00564	15
16	19, 2359	0, 00165	13, 9007	0, 00422	4, 8411	0, 00566	14
17	19, 1367	0, 00175	13, 6475	0, 00428	4, 5015	0, 00568	13
18	19, 0317	0, 00185	13, 3904	0, 00435	4, 1605	0, 00570	12
19	18, 9209	0, 00194	13, 1285	0, 00442	3, 8183	0, 00572	11
20	18, 8043	0, 00204	12, 8629	0, 00449	3, 4749	0, 00574	10
21	18, 6820	0, 00213	12, 5934	0, 00456	3, 1304	0, 00576	9
22	18, 5540	0, 00223	12, 3201	0, 00462	2, 7850	0, 00577	8
23	18, 4203	0, 00232	12, 0430	0, 00468	2, 4387	0, 00578	7
24	18, 2811	0, 00241	11, 7622	0, 00474	2, 0917	0, 00579	6
25	18, 1363	0, 00251	11, 4779	0, 00480	1, 7441	0, 00580	5
26	17, 9859	0, 00261	11, 1901	0, 00485	1, 3959	0, 00581	4
27	17, 8301	0, 00269	10, 8989	0, 00491	1, 0473	0, 00582	3
28	17, 6689	0, 00278	10, 6043	0, 00496	0, 6984	0, 00582	2
29	17, 5022	0, 00287	10, 3065	0, 00501	0, 3492	0, 00582	1
30	17, 3301		10, 0056		0, 0000		0
Arg.	150° 330° — +	Differ. pro 1′	120° 300° — +	Differ. pro 1′	90° 270° — +	Differ. pro 1′	Arg.

Si Declinatio auſtralis eſt, mutantur ſigna.

Ad illuſtrandum hujus tabulae uſum ſit e. g.

I) Variatio in aſcenſione recta et in declinatione Capellae pro anno 1800 quaerenda.

Æ. med. Capellae pro 1800 = 2^s 15° 29,'0, declinatio = 45° 46' 36" bor.

Per tabulam pag. 29 cum Arg. declinationis loco latitudinis angulus ſubſidiarius α invenitur = 2^s 24° 6,'0 ergo pro aſcenſione recta

Arg. I = 2^s 15° 29,'0 + 2^s 24° 6,'0 — 3^s = 2^s 9° 35,'0 = + 6,"9806
Arg. II = 2 15 29,0 — 2 24 6,0 — 3 = 8 21 23,0 = — 2, 9979
+ 3, 9827
5
Pars variabilis praeceſſionis in Æ. = +19, 9135
Pars conſtans . . . . . = +45, 8799
Variatio in Æ . . . . . = +65,"7934

et pro declinatione

Arg. 2^s 15° 29,'0 = + 5,"01564 = variationi in declinatione.

Easdem prorſus quantitates inſtituto calculo per formulas invenies.

II) Quaeratur variatio in aſcenſione recta ſtellae Fomahand pro 1800.

Æ. med. Fomahand pro 1800 = 11^s 11° 38,'4, decl. = 30° 40' 38" auſtr.

Angulus ſubſidiarius α per tabulam = 2^s 26° 35,'9

Arg. I = 11^s 11° 38,'4 + 2^s 26° 35,'9 — 3^s = 11^s 8° 14,'3 = — 18,"5845
Arg. II = 11 11 38, 4 — 2 26 35, 9 — 3 = 5 15 2, 5 = + 19, 3330
+ 0, 7485
5
Pars variabilis praeceſſionis in Æ. . . + 3, 7425
Pars conſtans . . . . . + 45, 8799
Variatio in Æ . . . . . + 49,"6224

et pro declinatione

Arg. 11^s 11° 38,'4 = — 18,"9919 = variationi in declinatione.

Tabulae hujus uſus perennis eſt, et pro qualibet praeceſſionis aequinoctiorum hypotheſi inſervire poteſt, dummodo de differentia partis variabilis hujus variationis ratio habeatur. Sic tabulae Cl. *DELAMBRE* in Ephemeridibus aſtronomicis Pariſinis ad annum 1792 pro parte variabili 20,"084 conſtructae ſunt; tabula vero noſtra partem variabilem 20,01109 pro fundamento habet, ideoque differentia + 0,"07291 tabulis noſtris applicanda eſt, ut habeatur variatio prout ex tabulis Cl. *DELAMBRE* prodit. Sit e. g.

III) Variatio annua fixae α Argo navis in aſcenſione recta ſupputanda; eadem, quam Cl. *DELAMBRE* in ſuo paradigmate pag. 210 proponit.

Æ. med. α Argo navis pro 1790 = 3ˢ 4° 49,'0, declin. = 52° 35′ auſtr.

Angulus ſubſidiarius α = 2ˢ 22° 29,'3

Arg. I = 3ˢ 4° 49,'0 + 2ˢ 22° 29,'3 — 3ˢ = 2ˢ 27° 18,'3 = — 0,"9408

Arg. II = 3 4 49, 0 — 2 22 29, 3 — 3 = 9 12 19, 7 = — 4, 2724

— 5, 2132

5

Pars variabilis in Æ . . . . . —26, 0660

Differentia cum *DELAMBRE* + 0, 0729

26, 1389

Pars conſtans ſec. Cl. *DELAMBRE* 46, 0619

19, 9230

Cl. *DELAMBRE* loco citato invenit { 19, 894 / 19, 906

Fixas motu quodam, a motu punctorum aequinoctialium neutiquam pendente, cieri, extra omne dubium eſt. Praeceſſio horum punctorum ſiderum loca certa et determinata lege, ut ſupra demonſtravimus, immutat, ſed non ita, ut legi huic ſatisfaciat ad unguem, et cum obſervatione conciliari poſſit examuſſim. Exceſſus, vel defectus hujus motus, ex obſervatione derivatus, a motu, ex aequinoctiorum praeceſſionis theoria calculo ſubducto, illud eſt, quod *motus proprii* nomine inſigniri placuit. Quem laborem multi jamdudum aſtronomi ſuſceperunt, et hujus motus quantitatem definire aggreſſi ſunt. Sunt, qui propter motum hunc lentiſſimum ad obſervationes remotiſſimas confugiendum eſſe putarint, ut errores, ſi qui in obſervationibus laterent, longo annorum intervallo evaneſcerent; ego vero in hac re eidem ſemper ſententiae, quam ſupra in inquirenda praeceſſionis annuae quantitate protuli, obſequens, vehementer perſuaſum habeo, numeroſum annorum ſpatium obſervationibus rudioribus ſeculorum praeteritorum nequaquam facere aequipondium, et plus incertitudinis inde, quam auxilii conſequi poſſe; in qua re Cl. *MASKELYNE* haud aliter ſentire ex eo conjici poteſt, quod in quantitate hujus motus in aſcenſione recta, mea methodo elicita, cum ſua maxime conſentire videor. Eadem igitur ratione, qua in inveſtiganda praeceſſionis annuae quantitate uſus ſum, et hic utendum eſſe putabam; quam ob rem in comparatione obſervationum ad eliciendum hunc motum ſo-

ſum in Cl. *BRADLEJI* et *TOB. MAYERI* obſervationibus inhaerendum duxi.

Mos eſt abhinc ſemiſeculum apud aſtronomos Grenovicenſes non ſatis laudandus, et coeli contemplatoribus commendandus, ſiderum errantium loca cum pauciſſimis et ſemper eisdem fixis comparare. Nam ſi in planetarum motuum inaequalitates inquiratur, et illarum aequationes ex obſervationibus eliciantur: errores, ſi qui in fixarum harum poſitionibus ſunt commiſſi, in planetarum poſitiones redundabunt, et aequationum harum coëfficientes eo incertiores reddent, quo majore ſixarum, obſervationis erroribus inquinatarum, numero uſus fuerit obſervator. Jam ſi in planetarum obſervationibus ſemper eadem (etiamſi perperam determinata) adhiberetur fixa, aequationes hae, et tunc quidem veritati quam proxime accedentes elici poterunt, dummodo id provideatur, ut tantus ſit obſervationum numerus adhibitus in maximo valore poſitivo hujus aequationis, quantus in valore maximo negativo. Sed cum hoc fieri nequeat, veriſimillimum eſt, in pauciſſimarum fixarum ad hunc uſum delectu, in magno obſervationum numero, tantas per plurimorum annorum decurſum inter fixas has fore permutationes, ut, ſi qui in illis latent errores, hi eo pacto propemodum evaneſcant. Ideoque tum Cl *BRADLEJVS*, tum Cl. *MASKELYNE* triginta ſex tantummodo ſixas, ſumma cum cura definitas, in hunc uſum adhibuerunt, in quibus limandis indefeſſo ſemper ſtudio ſunt verſati.

Stellarum igitur harum aſcenſiones rectas, nuperrime a Cl. *MASKELYNE* ad annum 1802 determinatas, cum illis, quas Cl. *BRADLEJVS* ad annum 1760 retulit, conferre placuit, ut per 42 annorum ſpatium motus hic innoteſceret, quem proprium dicimus; qui quidem eo fidentius pro tali aſſumi poterit, quo accuratiores ſunt obſervationes. Nam, ne quid celem, res manifeſta eſt, motum hunc obſervationum naevos penitus involvere. Atqui cum obſervationum harum terminus intermedius in annum 1781 cadat, reductae ſunt ad hunc annum, ſumta ſcilicet poſitione media inter Cl. *BRADLEJI* et Cl. *MASKELYNE* obſervationes. Praeceſſionis vero quantitas ad hanc temporis epocham pro 42 annorum ſpatio per formulam ſequentem definita eſt:

$$(45,''888124 + 20,''010388 \text{ ſin } \mathfrak{A} \text{ tang. declin.})\ 42$$

et inde porro ex differentia cum obſervatione, motus hic annuus elicitus eſt. Quomodo hoc ſeorſum praeſtiterim, ſequens tabula clarius in conſpectum dabit.

Nomen Stellarum	AR. media 1760 ſec. Bradley.			AR. media 1802 ſec. Maskelyne			Differ. AR. Mask. cum AR. Bradl.		Variatio in AR. pro 42 ann. calcul.		Motus proprius in 42 annis
	°	′	″	°	′	″	′	″	′	″	″
γ Pegaſi	0	13	35,1	0	45	46,8	32	11,7	32	9,10599	+ 2,59401
α Arietis	28	25	26,6	29	0	34,05	35	7,45	34	53,89331	+13,55669
α Ceti	42	26	24,1	42	59	6,3	32	43,2	32	39,37301	+ 2,82699
Aldebar.	65	32	38,7	66	8	34,5	35	55,8	35	47,95121	+ 7,84879
Capella	74	44	59,5	75	31	14,4	46	14,9	46	1,24321	+13,65679
Rigel	75	45	10,9	76	15	24,15	30	13,25	30	5,89101	+ 7,35899
β Tauri	77	47	7,0	78	26	45,75	39	38,75	39	32,04711	+ 6,70289
α Orion.	85	32	47,2	86	6	48,9	34	1,7	33	55,41521	+ 6,28479
Sirius	98	38	36,8	99	6	21,75	27	44,95	28	2,49207	—17,54207
Caſtor	109	48	45,7	110	29	7,65	40	21,95	40	27,04071	— 5,09071
Procyon	110	40	56,8	112	13	54,0	32	57,2	33	26,11390	—28,91390
Pollux	112	39	3,7	113	17	40,2	38	36,5	39	8,10461	—31,60461
α Hydrae	138	56	57,0	139	27	49,5	30	52,5	30	52,88908	— 0,38908
Regulus	148	53	32,5	149	27	12,0	33	39,5	33	46,97616	— 7,47616
β Leonis	174	11	59,0	174	44	13,05	32	14,05	32	30,22011	— 6,17011
β Virgin.	174	32	51,3	175	5	41,55	32	50,25	32	11,27639	+38,97361
Spica	198	8	44,1	198	41	40,5	32	56,4	32	54,17854	+ 2,22146
Arcturus	211	10	53,0	211	39	28,0	28	35,8	29	24,95541	—49,15541
α^2 Librae	219	24	40,6	219	59	12,0	34	31,4	34	32,33211	— 0,93211
Gemma	231	8	6,0	231	34	36,75	26	30,75	26	26,12281	+ 4,62719
αSerpent.	233	7	0,0	233	37	50,8	30	50,85	30	42,95038	+ 7,89962
Antares	243	41	0,9	244	19	21,45	38	20,55	38	14,51911	+ 6,03089
α Hercul.	255	55	45,0	256	24	21,15	28	36,15	28	33,88781	+ 2,26219
α Oph.	260	57	4,0	261	26	12,15	29	8,15	28	59,60201	+ 8,54799
Wega	277	12	11,0	277	33	29,55	21	18,55	21	2,17661	+16,37339
γ Aquilae	293	42	45,3	294	12	37,95	29	52,65	29	50,58191	+ 2,06809
Atair	294	46	0,7	295	16	46,95	30	46,25	30	16,13691	+30,11309
β Aquilae	295	52	51,5	296	23	46,05	30	54,55	30	49,66777	+ 4,88223
α^1 Capric.	301	4	55,1	301	39	55,35	35	0,25	34	55,17551	+ 5,07449
α^2 Capric.	301	10	49,9	301	45	52,2	35	2,3	34	55,54181	+ 6,75819
Deneb	308	18	51,3	308	40	13,65	21	22,35	21	20.74391	+ 1,60609
α Aquar.	328	21	46,1	328	54	6,45	32	20,35	32	17,79951	+ 2,55049
Fomah.	341	5	5,0	341	40	12,15	35	7,15	34	47,13461	+20,01539
α Pegaſi	343	12	22,5	343	43	33,45	31	10,55	31	7,52724	+ 3,02276
α Andr.	359	0	25,0	359	32	39,15	32	14,15	32	1,67932	+12,47068

Converti me porro ad inveſtigationem motus hujus in declinatione, quem pari modo, ut hunc, in aſcenſione recta pertractans, in ſequentes incidi quantitates, cum quantitatibus Cl. *MASKELYNE* non usquequaque conſentientes, ut haec oſtendet tabella:

Nomen Stellarum	Distantia polar. med. 1760 sec. *Bradley*	Distantia polaris med. 1802 sec. *Maskelyne*	Diff. declin. Maskelyne cum decl. *Bradley*	Variat. in Decl. pro 42 ann. calcul.	Motus proprius in 42 annis
	° ′ ″	° ′ ″	′ ″	′ ″	″
γ Pegasi	76 9 5,3	75 54 55,9	14 9,4	14 0,40488	+ 8,99512
α Arietis	67 41 1,4	67 28 45,2	12 16,2	12 17,06766	— 0,86766
α Ceti	86 51 59,8	86 41 36,6	10 23,2	10 17,52390	+ 5,67610
Aldebar.	73 59 39,7	73 54 0,6	5 39,1	5 43,93968	— 4,83968
Capella	44 16 27,5	44 13 12,4	3 15,1	3 35,60364	— 20,50364
Rigel	98 29 50,7	98 26 19,0	3 31,7	3 23,25060	+ 8,44940
β Tauri	61 37 12,0	61 34 23,1	2 48,9	2 53,07654	— 4,17654
α Orionis	82 39 34,5	82 38 27,8	1 6,7	1 1,11294	+ 5,58706
Sirius	106 24 6,3	106 27 4,7	2 58,4	2 9,65904	+ 48,74096
Caſtor	57 36 36,0	57 41 28,0	4 52,0	4 49,50012	+ 2,49988
Procyon	84 10 36,0	84 16 34,4	5 58,4	5 14,24904	+ 44,15096
Pollux	61 24 56,8	61 30 25,7	5 28,9	5 28,01664	+ 0,88336
α Hydrae	97 37 48,0	97 48 19,3	10 31,3	10 36,26808	— 4,96808
Regulus	76 52 9,1	77 4 9,5	12 0,4	12 1,69692	— 1,29692
β Leonis	74 5 13,0	74 19 14,6	14 1,6	13 56,52240	+ 5,07760
β Virginis	86 52 56,1	87 7 6,7	14 10,6	13 57,00540	+ 13,59460
Spica	99 54 3,0	100 7 14,6	13 11,6	13 17,37672	— 5,77672
Arcturus	69 33 27,1	69 46 45,4	13 18,3	11 57,20628	+ 81,09372
α^2 Librae	105 1 44,7	105 12 26,0	10 41,3	10 46,64082	— 5,34082
Gemma	62 27 48,0	62 36 35,5	8 47,5	8 44,83620	+ 2,66380
α Serp.	82 48 11,2	82 56 24,6	8 13,4	8 21,39852	— 7,99852
Antares	115 52 32,5	115 58 31,2	5 58,7	6 8,38200	— 9,68200
α Hercul.	75 19 5,5	75 22 15,6	3 10,1	3 20,93220	— 10,83220
α Ophiuc.	77 14 48,9	77 17 0,0	2 11,1	2 8,66170	+ 2,43830
Wega	51 25 33,7	51 23 35,3	1 58,4	1 47,96268	+ 10,43732
γ Aquilae	79 57 16,6	79 51 26,8	5 49,8	5 41,32098	+ 8,47902
Atair	81 44 51,1	81 38 33,8	6 17,3	5 55,49304	+ 21,80696
β Aquilae	84 10 28,3	84 4 33,0	5 55,3	6 10,24848	— 14,94848
α^1 Capr.	103 13 44,4	103 6 22,9	7 21,5	7 17,54592	+ 3,95408
α^2 Capr.	103 16 22,0	103 8 41,6	7 40,4	7 18,78282	+ 21,61718
Deneb	45 33 59,9	45 25 16,4	8 43,5	8 43,07178	+ 0,42822
α Aquarii	91 28 32,8	91 16 25,1	12 7,7	11 57,60150	+ 10,09850
Fomah.	120 53 14,0	120 39 52,7	13 21,3	13 16,43380	+ 4,86620
α Pegasi	76 4 54,0	75 51 18,2	13 35,8	13 25,68558	+ 10,11442
α Andr.	62 14 5,9	62 0 5,8	14 0,1	14 0,36918	— 0,26918

Motus hic proprius in declinatione plus aequo ab illo, a Cl. *MASKELYNE* invento, abludit, quod in obſervationis vitium conjici debere nemo inficias ibit. Statui igitur motum hunc in declinatione alio definire conſilio, quod ut curationibus etiam et recentiori-

bus niteretur obſervationibus, Cl. *MAYERI* declinationes ad epocham anni 1756 cum illis, a Cl. *PIAZZI* ad annum 1800 conditis, comparare animus fuit. Qualem vero, facto hoc periculo, aſſecutus ſim exitum minime auſpicatum, ex tabella praeſenti patebit. Sed non eſt noſtrum, tantam tamque ſubtilem dirimere litem, quam futurorum ſeculorum judices expediant.

Nomen Stellarum	Decl. media 1756 ſec. *Mayer*			Declin. media 1800 ſec. *Piazzi*			Differ. decl. Mayer. cum decl. *Piazzi*		Variat. in decl. Pro 44 annis calculata		Motus propr. in 44 annis
	°	′	″	°	′	″	′	″	′	″	″
γ Pegaſi	13	49	37,9	14	4	18,97	14	41,07	14	40,43140	+ 0,63860
α Arietis	22	17	50,9	22	30	37,76	12	46,86	12	52,47446	— 5,61446
α Ceti	3	7	9,4	3	17	49,11	10	39,71	10	47,33672	— 7,62672
Aldebar.	15	59	48,1	16	5	44,65	5	56,55	6	0,90825	— 4,35825
Capella	45	43	10,7	45	46	39,10	3	28,40	3	46,68489	— 18,28489
Rigel	8	30	9,5	8	26	34,46	3	35,04	3	33,46244	+ 1,57756
β Tauri	28	22	32,3	28	25	26,66	2	54,36	3	2,02658	— 7,66658
α Orionis	7	20	18,9	7	21	26,91	1	8,01	1	4,66486	+ 3,34514
Sirius	16	23	54,2	16	27	4,09	3	9,89	2	15,32672	+ 54,56328
Caſtor	32	23	53,1	32	18	45,84	5	7,26	5	2,31314	+ 4,94686
Procyon	5	49	51,3	5	43	40,28	6	11,02	5	28,64653	+ 42,37347
Pollux	28	35	36,6	28	29	48,54	5	48,06	5	42,97832	+ 5,08168
α Hydrae	7	36	46,1	7	47	52,40	11	6,30	11	6,19900	+ 0,10100
Regulus	13	9	0,0	12	56	22,80	12	37,20	12	35,74650	+ 1,45350
β Leonis	15	56	6,1	15	41	25,87	14	40,23	14	36,30160	+ 3,92840
β Virgin.	3	8	15,7	2	53	31,52	14	44,18	14	36,81580	+ 7,36420
Spica	9	52	45,2	10	6	43,18	13	57,98	13	55,53938	+ 2,44062
Arcturus	20	27	47,2	20	13	48,88	13	58,32	12	31,63950	+ 86,68050
α^2 Librae	15	0	38,5	15	12	3,43	11	24,93	11	17,82900	+ 7,10100
α Serp.	7	12	40,7	7	3	53,54	8	47,16	8	45,72660	+ 1,43340
Antares	25	51	54,8	25	58	25,58	6	30,78	6	26,55370	+ 4,22630
α Ophiuc.	12	45	27,4	12	43	3,03	2	24,37	2	15,31444	+ 9,05556
Wega	38	34	16,4	38	36	21,85	2	5,45	1	52,72249	+ 12,72751
Atair	8	14	36,6	8	21	4,75	6	28,15	6	11,92069	+ 16,22931
α^1 Capric.	13	14	27,8	13	6	51,33	7	36,27	7	37,83584	— 1,56584
α^2 Capric.	13	16	49,0	13	9	8,87	7	40,13	7	39,13342	+ 0,99658
Deneb	44	25	11,6	44	34	20,58	9	8,98	9	7,70375	+ 1,27625
α Aquar.	1	29	36,3	1	17	4,63	12	31,67	12	31,46735	+ 0,20265
Fomah.	30	54	24,9	30	40	38,48	13	46,42	13	54,15778	— 7,73778
α Pegaſi	13	53	54,8	14	7	58,42	14	3,62	14	3,89238	— 0,27238
α Andr.	27	44	37,6	27	59	11,04	14	33,44	14	40,38120	— 6,94120

Ut motus hi proprii ſtellarum praecipuarum, quarum uſus aſtronomis practicis perpetuo recurrit, unico oculorum conjectu comprehendi queant, juvat hos eosdem, a Cl. *MASKELYNE* nuper compertos, ſubjungere.

Nomen Stellarum	Motus proprius annuus in AR.			Motus proprius annuus in decl.		
	in arcu	in tempore	Sec. *Maskelyne* in temp.	Ex comparat. decl. *Bradl.* et *Maskelyne*	Ex comparat. decl. *Maurri* et *Piazzi*	Sec. *Maskelyne*
	"	"	"	"	"	"
γ Pegaſi	+ 0,06176	+ 0,0041	— 0,006	+ 0,21417	+ 0,01451	+ 0,15
α Arietis	+ 0,32278	+ 0,0214	+ 0,007	— 0,02066	— 0,12760	— 0,07
α Ceti	+ 0,06731	+ 0,0045	— 0,008	+ 0,13515	— 0,17333	+ 0,08
Aldebar.	+ 0,18211	+ 0,0121	+ 0,002	— 0,11523	— 0,09905	— 0,12
Capella	+ 0,32511	+ 0,0215	+ 0,014	— 0,48818	— 0,41557	— 0,44
Rigel	+ 0,17521	+ 0,0116	— 0,002	+ 0,20118	+ 0,03585	+ 0,16
β Tauri	+ 0,15959	+ 0,0107	+ 0,001	— 0,09944	+ 0,17424	— 0,10
α Orionis	+ 0,14964	+ 0,0099	+ 0,001	+ 0,13303	+ 0,07603	+ 0,13
Sirius	+ 0,41767	+ 0,0278	— 0,028	+ 1,16049	+ 1,24008	+ 1,04
Caſtor	— 0,12121	— 0,0086	— 0,010	+ 0,05952	+ 0,11243	+ 0,04
Procyon	— 0,68843	— 0,0458	— 0,053	+ 1,05121	+ 0,96303	+ 0,95
Pollux	— 0,75249	— 0,0502	— 0,049	+ 0,02104	+ 0,11549	0,00
α Hydrae	— 0,00926	— 0,0006	— 0,006	— 0,11829	+ 0,00230	— 0,14
Regulus	— 0,17800	— 0,0118	— 0,015	— 0,03088	+ 0,03303	— 0,08
β Leonis	— 0,14691	— 0,0098	— 0,038	+ 0,12090	+ 0,08928	+ 0,07
β Virginis	+ 0,92794	+ 0,0617	+ 0,049	+ 0,32368	+ 0,16737	+ 0,24
Spica	+ 0,05289	+ 0,0031	— 0,001	— 0,13754	+ 0,05547	— 0,19
Arcturus	— 1,17037	— 0,0727	— 0,084	+ 1,93080	+ 1,97001	+ 1,72
α^2 Librae	— 0,02219	— 0,0011	— 0,007	— 0,12716	+ 0,16139	— 0,15
Gemma	+ 0,11017	+ 0,0073	+ 0,017	+ 0,06342	. . . . .	+ 0,13
α Serp.	+ 0,18809	+ 0,0125	+ 0,007	— 0,19044	+ 0,03267	— 0,19
Antares	+ 0,14359	+ 0,0094	0,000	— 0,23052	+ 0,09605	— 0,26
α Hercul.	+ 0,05386	+ 0,0032	0,000	— 0,25791	. . . . .	— 0,23
α Ophiuc.	+ 0,20352	+ 0,0132	+ 0,004	+ 0,05805	+ 0,20581	+ 0,05
Wega	+ 0,38984	+ 0,0259	+ 0,015	+ 0,24851	+ 0,28926	+ 0,27
γ Aquilae	+ 0,04924	+ 0,0036	— 0,007	+ 0,20183	. . . . .	+ 0,16
Atair	+ 0,71698	+ 0,0474	+ 0,032	+ 0,51921	+ 0,36885	+ 0,54
β Aquilae	+ 0,11624	+ 0,0081	— 0,002	— 0,35592	. . . . .	— 0,35
α^1 Capric.	+ 0,12082	+ 0,0077	+ 0,000	+ 0,09414	— 0,03529	+ 0,28
α^2 Capric.	+ 0,16091	+ 0,0107	+ 0,003	+ 0,51470	+ 0,02265	+ 0,26
Deneb	+ 0,03824	+ 0,0025	— 0,005	+ 0,01019	+ 0,02901	+ 0,03
α Aquarii	+ 0,06072	+ 0,0040	— 0,005	+ 0,24044	+ 0,00461	+ 0,19
Fomah.	+ 0,47656	+ 0,0325	+ 0,023	+ 0,11586	— 0,17586	+ 0,06
α Pegaſi	+ 0,07197	+ 0,0051	— 0,004	+ 0,24082	— 0,00619	+ 0,18
α Andr.	+ 0,29692	+ 0,0195	+ 0,005	— 0,00641	— 0,15775	— 0,06

I. Quaeratur e. g. per tabulas hic relatas aſcenſio recta et declinatio primae ſtellae Tauri (Aldebaran) ad annum 1700.

Si fixarum catalogo a Cl. *MASKELYNE* nuper ad annum 1802 conſtructo utamur: terminus medius erit annus 1751; itaque per tabulam (pag. 37) pro hoc anno habemus

Praeceſſionem in Æ = (45,"880185 + 20,"011067 ſin Æ tang. decl.) × 102

Praeceſſionem in declin. = (20,"011067 coſ Æ) × 102.

Ex Cl. *BRADLEJI* catalogo ad annum 1760 conſtructo habetur pro anno 1751 Æ α ♉ = 65° 24′ 58,"9, declinatio borealis 15° 59′ 5,"4 et calculo peracto, invenitur praeceſſio in aſcenſionem rectam = — 1° 26′ 51,"48, et in declinationem = — 14′ 9,"15, et cum ex Cl. *MASKELYNE* catalogo ad annum 1802 Æ α Tauri ſit = 66° 8′ 34,"5, declinatio bor. = 16° 5′ 59,"4; erunt eaedem ad

Annum 1700 Aſcenſio recta = . .	64°	41′	43,"02	Declinat. =	15°	51′	50,"25 b.
Motus propr. vero eſt — 0,"18211 × 102 = —			18, 58	+0,"11523 × 102 = +			11, 75
Aſcenſio recta 1700 = ...	64°	41′	24,"44	Declinat. =	15°	52′	2,"00
Sec. Cl. BÜRG*) ex obſervatione .	64	41	27, 2	——	15	52	4, 8
Differentia			2,"76	. . . . .			2, 80

II. Sit aſcenſio recta Arcturi ex catalogo Cl. *MASKELYNE* ad annum 1740 deducenda. Terminus medius annus 1771 eſt, et per tabulam pag. 37 pro hoc anno:

Praeceſſio in Æ = (45,"885475 + 20,"010617 ſin Æ tang. decl.) × 62

Praeceſſio in declin. = (20,"010617 coſ. Æ) × 62

Æ pro 1771 = 211° 18′ 35,"2, decl. bor. = 20° 23′ 25,"1; inde praeceſſio in aſcenſion. rect. pro 62 annis = — 43′ 25,"16; et cum pro anno 1802 Æ Arcturi ſecund. Cl. *MASKELYNE* ſit = 211° 39′ 28,"8,

erit aſcenſio recta media pro 1740	=	210°	56′	3,"64
et propter motum proprium + 1,"17037 × 62 .	= +	1	12,	56
Aſcenſio recta 1740		210	57	16, 20
ſecundum obſervationes Cl. *LE MONNIER***).		210	57	10, 0
Differentia				6,"20

*) Monatl. Correſpondenz. Junius 1806.

**) Conn. des tems, Année VI, pag. 216.

III. Pro declinatione ejusdem ſtellae ad annum 1750 habetur

Declinatio 1802 ex Cl. *MASKELYNE* catalogo	20°	13′	14,″6 bor.
Praeceſſio in 52 annis . . . . . +	14	49, 0	
Motus proprius + 1,″9308 + 52 . . . . . +	1	40, 4	
Declinatio bor. 1750	20	29	44, 0
ex obſervationibus Cl. DE LA *CAILLE* *)	20	29	39, 3
Differentia			4, 7

Differentiae hae perexiguae, ad minimum aequa ex parte in obſervationum vitium absque injuria conjiciendae, ſatis ſuperque demonſtrant, quantitates praeceſſionis punctorum aequinoctialium, et motus proprii fixarum, prout a nobis definitae et adhibitae ſint, ad veritatem quam proxime accedere.

Recentioribus temporibus, introducto novo hoc organo, quod *circulos repetentes* (Cl. *BORDAE* nomine inſignitos) vocant, ſtellae polaris uſus tum apud aſtronomos magnopere increbuit, tum apud geographos plurimum conſuetudine invaluit.

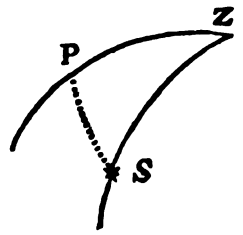
Primo: Ad determinandam poli elevationem ſtella haec peridonea viſa eſt, cum variationes altitudinum ante et poſt tranſitum per meridianum obſervatarum, exiguae admodum, adeoque accuratius computandae ſint, et altitudines ipſae, ob perexiguum arcum diurnum per longius temporis intervallum obſervandae, ideoque ſaepius in inſtrumento repetendae et multiplicandae veniant.

Secundo: Stellae hujus uſus ad determinandos objectorum terreſtrium ſitus reſpectu meridiani translatus eſt. Cum primum enim tale adeſt inſtrumentum, quale eſt *circulus repetitor*, quod praeter illum tubum, qui ad ſtellam dirigitur, alio inſtructus eſt, qui ad objectum terreſtre dirigi poteſt: illi ita applicari poſſunt, ut conſtet, quantum angulum intercipiant planum verticale per ſtellam, et planum verticale per objectum. Cum porro ex altitudine ſtellae quovis tempore noſcatur etiam angulus, quem cum meridiano intercipit planum verticale, in quo ſtella verſatur: objecti terreſtris, quod vocant *Azimuthum*, quoque innoteſcet.

Conſultum aliquibus viſum eſt, obſervationem anguli intercepti ſemper in maxima digreſſione ſtellae a meridiano ſive orientali, ſive occidentali inſtituere, quoniam circa illud tempus, quo contingit, Azimutha minus quam quovis alio mutantur. Sed conditio haec, cum ſtella nonniſi noctu aut in crepuſculo obſervari poſſit, metho-

*) Aſtronomiae fundamenta etc. Pariſiis 1757, pag. 235.

dum hanc valde coarctat, et anguſtioribus circumſcribit limitibus, cum certis anni temporibus, quibus ſtella in Azimuthis ſuis maximis interdiu verſatur, obſervatio haec perfici neutiquam poſſit, etiamſi tubi optici, quibus *circuli repetentes* muniuntur, tantae ſint perfectionis, ut ſtellam etiam interdiu oſtendant. Ego vero cum non crediderim, conditioni huic religioſe obtemperandum, et magnos in ejus neglectu pertimeſcendos eſſe errores, in hunc effectum diligentius inquiſivi, ut periculum, ſi quod imminet, exploratum et perſpectum habeatur.



Sit itaque Z Zenith, P Polus aequatoris, adeoque PZ meridianus, S locus ſtellae polaris. Erit

PZ complementum latitudinis loci $= p$

PS complementum declinationis ſtellae $= D$

Angulus SPZ ſupplement. anguli horarii $= h$

Angulus PZS Azimuth. ſtellae quaeſitum $= z$

Eſt igitur:

$$\text{Cotang } z = \frac{\text{tang D cof p}}{\text{ſin h}} + \text{ſin p cotang h}$$

vel per angulum ſubſidiarium x, cujus

tangens $x = -\text{cof h cotang D}$

Subſtituendo erit

$$\text{cotang } z = \frac{-\text{cotang h cof (p} + x)}{\text{ſin x}}$$

Ponatur in formula prima $h = 90°$, erit pro maxima digreſſione ſtellae a meridiano ſive orientali ſive occidentali cotangens Azimuthi maximi

$$= \text{tang D cof p}$$

Qualem nunc error in angulo horario h vim habeat in Azimuthum z, per ſequentem inveniemus differentiationem. Erit itaque:

$$+ dz \text{ cofec}^2 z = + dh \left(\text{tang D cof p} \frac{\text{cof h}}{\text{ſin h}^2} + \text{ſin p cofec h}^2\right)$$

$$\text{vel } \frac{dz}{\text{ſin z}^2} = \frac{dh}{\text{ſin h}^2} \left(\text{tang D cof p cof h} + \text{ſin p}\right)$$

$$\text{vel } dz = dh \frac{\text{ſin z}^2}{\text{ſin h}^2} \left(\text{tang D cof p cof h} + \text{ſin p}\right)$$

$$\text{vel } dz = dh \frac{\text{cof D}^2}{\text{ſin Z S}^2} \left(\text{tang D cof p cof h} + \text{ſin p}\right)$$

Ut valor hujus formulae definite innoteſcat, ponamus caſum, in quo valor dh maximam in dz habet vim, quod aperte tunc evenit, quando ſtella in ipſo meridiano verſatur; tum enim eſt $ZS = ZP =$ complemento latitudinis, et ubi cof $h = o$. Unde

$$dz = dh \frac{\text{cof } D^2}{\text{cof } p^2} \text{ ſin } p$$

vel $dz = dh$ cof D^2 tang p ſec p

Pro ſtella polari eſt cof $D^2 =$ cof^2 88° 14′ $= 0{,}00095$ Factor, tang p ſec p valorem 2 (rectius 1,960) ſub latitudine 51° ne attingit quidem; erit itaque in hoc caſu

$$dz = 0{,}0019\, dh$$

ubi probe notandum, nos hic minime faventem poſuiſſe caſum; et tamen omnis error in z ne $\frac{1}{300}$ quidem erroris partem exaequat, qui ex h provenire poteſt. Ponatur nunc, errorem in angulo horario h, qui ex aſcenſione recta ſtellae Polaris, et ex temporis veri determinatione exoriri poteſt, citra omnem veriſimilitudinem ad 10 minuta ſecunda in tempore allurgere, quod in hodierna aſtronomia practica nunquam ne craſſiſſimis quidem obſervationibus evenire poteſt, tamen omnis effectus ingentis hujus erroris, qui in Azimuthum redundabit, vix 0,″3 in arcu producere valet.

Liquet itaque ex diſquiſitione noſtra, methodum hanc, per ſtellam polarem determinandi quovis tempore tuto, et citra omne hallucinationis periculum adhiberi poſſe.

Si objectum quoddam terreſtre in meridiani proximitate ad boreum ita jacet, ut ſtella polaris per ejusdem motum diurnum planum verticale hujus objecti attingat, poteſt problema nunc diſceptatum etiam inverti, et ex obſervato tempore tranſitus per hoc planum, ſitus hujus objecti, ad meridianum relatus, definiri.

Uſus itaque multifarius, frequens et inſignis ſtellae polaris, qui potiſſimum cognitionem exquiſitam declinationis hujus fixae praeſupponit, me commovit, ut in ejusdem motum proprium diligentius inquirerem. Cum vero ex *MAYERO* et *LALANDIO*, qui eandem jam pertractarunt materiem, notum mihi eſſet, motum hunc perexiguum eſſe: ſtatui, fixae hujus declinationem ex *FLAMSTEEDIO* derivare; quod experimentum eo fidentius capere potui, cum experientia jam edoctus fuiſſem, *FLAMSTEEDII* obſervationes in declinatione praeprimis ſtellarum circumpolarium, quae ſupra et infra polum inſtitutae ſunt, et in quibus inſtrumenti errores evaneſcunt, majorem prae ſe ferre accurationis notam, quam illius obſervationes in aſcenſione recta, quae ejusdem fixae poſitiones ſaepenumero adeo diverſas exhibent, ut ſine noxa ne ad *medium* quidem, quod dicimus *arithmeticum*, admittendae ſint. Pro quavis vero ſtella deviationem Quadrantis a meridiani plano calculo definire, opus ſane praepoſterum eſſet. Jam cum *FLAMSTEEDIO* aberratio lucis et axis terreſtris nutatio nondum cognita eſſet; ejusdem obſervationes ſtellae polaris ab ovo ad calculum mihi revocandae, et motuum horum rationes conficiendae erant; quo calculo rite peracto, ſequentes elicui fixae hujus diſtantias medias a polo boreo:

Stellae polaris diſtantia a polo boreo anno 1690 ex FLAMSTEEDII *obſervationibus ſupra polum deducta.*

Temp. obſerv. St. vet.	Diſtant. a vert. obſ. ab errore collim. liberae	Diſtantia a polo boreo	
		apparens obſerv.	media 1690
1689			
Sept. 18	36° 8′ 50″	2° 21′ 48.″4	2° 21′ 42.″9
Nov. 15	8 55	21 43.4	58.6
29	8 55	21 43.4	61.6
30	8 55	21 43.4	61.8
Dec. 9	9 0	21 38.4	57.9
9	9 5	21 33.4	52.9
15	9 0	21 38.4	58.4
17	9 10	21 28.4	48.5
26	9 10	21 28.4	49.2
1690			
Sept. 15	36° 8′ 55″	2° 21′ 43.″4	58.6
Oct. 19	9 35:	21 3.4:	. . .
Dec. 3	9 25	21 13.4	54.1
11	9 55:	20 43.4:	. . .
12	9 25	21 13.4	55.2
14	9 25	21 13.4	55.2
1691			
Jan. 2	36° 9′ 45″	2° 20′ 53.″4	36.7
6	9 35	21 3.4	46.7
7	9 35	21 3.4	46.8
8	9 40	20 58.4	41.7
Nov. 24	9 50	20 48.4	49.4
Dec. 8	9 45	20 53.4	56.5
16	9 50	20 48.4	52.1
1692			
Nov. 10	36° 10′ 5″	2° 20′ 33.″4	52.2
27	10 10	20 28.4	51.0
Dec. 11	10 20	20 18.4	42.6
1693			
Sept. 19	36° 10′ 0″	2° 20′ 38.″4	58.8
26	10 20	20 18.4	41.5
Oct. 2	10 15	20 23.4	48.9
Dec. 4	10 50	19 48.4	32.2
19	10 35	20 3.4	48.4

Temp. obſerv. St. vet.	Diſtant. a vert. obſ. ab errore collim. liberae	Diſtantia a polo boreo	
		apparens obſerv.	media 1690
1694			
Jan. 4	36° 10′ 35″	2° 20′ 3.″4	2° 21′ 49.″5
8	10 35	20 3.4	49.5
Sept. 22	10 40	19 58.4	39.5
Dec. 13	10 55	19 43.4	47.3
21	10 55	19 43.4	47.9
1695			
Jan. 8	36° 11′ 15″	2° 19′ 23.″4	28.8
Jul. 31	10 40	19 58.4	39.3
Oct. 27	11 20	19 18.4	31.4
Nov. 18	11. 10	19 28.4	47.4
Dec. 3	11 25	19 13.4	35.0
4	11 25	19 13.4	35.1
25	11 50	18 48.4	. . .
27	11 55	18 43.4	. . .
1696			
Jan. 13	36° 11′ 35″	2° 19′ 3.″4	27.5
14	11 30	19 8.4	32.4
Jul. 14	10 0	19 38.4	34.2
19	10 55	19 43.4	40.2
Nov. 21	11 40	18 48.4	27.2
23	11 40	18 48.4	27.6
Dec. 2	11 45	18 43.4	23.7
1697			
Oct. 17	36° 11′ 40″	2° 18′ 48.″4	33.5
Dec. 8	12 10	18 18.4	16.3
16	12 10	18 18.4	17.0
1698			
Nov. 30	36° 12′ 35″	2° 17′ 43.″4	58.1

Summa 50 (2° 21′) + . . . 2208.″8

Diſtantia media . . . . 2° 21′ 44.″18

Stellae polaris diſtantia a polo boreo 1690 ex FLAMSTEEDII obſervationibus infra polum deducta.

Temp. obſerv. St. vet.	Diſtant. a vert. obſ. ab errore collim. liberae	Diſtantia a polo boreo	
		apparens obſerv.	media 1690
1689			
Nov. 29	40 51 40	2 21 9,3	2 21 27,6
Dec. 1	51 45	21 14,3	32,8
9	51 45	21 14,3	33,8
1690			
Apr. 12	40 52 5	2 21 34,3	33,2
25	52 20	21 49,3	45,2
Maj. 14	52 20	21 49,3	42,1
Dec. 3	51 20	20 49,3	30,0
13	51 20	20 49,3	31,1
14	51 20	20 49,3	31,2
1691			
Jan. 6	40 51 35	2 21 4,3	47,7
7	51 30	20 59,3	42,8
Mart. 10	51 30	20 59,3	29,4
Apr. 25	51 45	21 14,3	32,2
Nov. 24	51 0	20 29,3	30,3
Dec. 8	50 50	20 19,3	22,4
21	50 45	20 14,3	. . .
1692			
Mart. 9	40 51 0	2 20 29,3	21,3
Maj. 2	50 55	20 24,3	. . .
3	51 30	20 59,3	37,3
Nov. 27	50 45	20 14,3	36,9
1693			
Dec. 4	40 50 30	2 19 59,3	43,1
7	50 30	19 59,3	43,4
1694			
Jan. 7	40 50 20	2 19 49,3	35,4
Mart. 17	50 45	20 14,3	44,6
Maj. 4	51 0	20 29,3	47,5
Dec. 10	50 0	19 29,3	33,0
13	50 10	19 39,3	43,3
28	50 5	19 34,3	39,3

Temp. obſerv. St. vet.	Diſtant. a vert. obſ. ab errore collim. liberae	Diſtantia a polo boreo	
		apparens obſerv.	media 1690
1695			
Apr. 1	40 50 10	2 19 39,3	2 21 24,4
Maj. 3	50 50	20 19,3	46,7
13	50 40	20 9,3	45,2
18	50 50	20 19,3	54,5
Dec. 4	49 50	19 19,3	41,0
13	49 50	19 19,3	41,9
1696			
Jan. 13	40 49 45	2 19 14,3	38,0
14	49 45	19 14,3	38,4
16	49 55	19 24,3	47,7
Maj. 1	50 20	19 49,3	45,7
6	50 25	19 54,3	49,8
Dec. 2	49 40	19 9,3	49,3
7	49 30	18 59,3	40,1
1697			
Apr. 22	40 50 15	2 19 44,3	60,5
Dec. 7	49 15	18 44,3	42,1
16	49 15	18 44,3	42,9
1698			
Dec. 18	40 48 50	2 18 19,3	35,5
1699			
Dec. 18	40 48 30	2 17 59,3	33,2

Summa 44 (2° 21′) + . . . 1713,″8

Diſtantia media . . . . 2° 21′ 38,″95
ex diſtant. ſupra polum 2 21 44, 18

Medium 2 21 41, 57
Praeceſſ. pro 11 diebus — 0, 60

Diſt. med. pro 1690 St. v. 2° 21′ 40,″97

Poſtquam declinationem mediam ſtellae polaris ex *FLAMSTEEDII* obſervationibus ad annum 1690 determinaveram, conferenda mihi erat cum ejusdem declinatione noſtris temporibus definita. In hunc finem peropportuna nobis viſa eſt declinatio noſtra, in ſpecula *Erneſtina circulo repetente Bordiano* tricentenis obſervationibus determinata,*) et cum illa a Cl. *DELAMBRE* ex quingentis obſervationibus deducta ad 0,39 ſecundorum ſcrupulum conſentiens.

Aliam vero methodum, qua ſupra ad eliciendum hunc motum proprium hic utendum putavi, praeſens calculi typus luculentius, quam verba multa, illuſtrabit.

Ex obſervationibus meis in ſpecula *Erneſtina* inſtitutis, eſt aſcenſio recta media ſtellae polaris ad initium anni 1790 = 12ʰ 33′ 56,″943, declinatio media = 88° 11 10,″232; ex tabulis meis ſolaribus noviſſimis obliquitas media eclipticae pro eodem tempore 23° 28′ 1,″86. Hinc per formulas notiſſimas computantur longitudo et latitudo hujus fixae, et calculo peracto erit:

Longitudo Polaris pro 1790	85°	37′	50,″851	Latitudo	66°	4′	34,″760
Praeceſſ. 100 annor. (p. 26)	— 1	23	25, 168	. . . . .			
Motus ſecularis	—		7, 910	. . . . .	—		52, 515
Long. media pro 1690 . .	84°	14′	17,″773	Latitudo	66°	3′	42,″245

Quibus datis, et obliquitate media eclipticae pro anno 1690, ex tabulis meis ſolaribus excerpta, invenietur denuo aſcenſio recta et declinatio ſtellae pro initio anni 1690. Sed habet ſtella polaris in calculo trigonometrico id difficultatis, quod, cum ejus longitudo et declinatio prope ad quadrantem accedat, illarum relationes ad aequatorem et ad eclipticam per tabulas noſtras trigonometricas conſuetas difficilius abſolvuntur. Cum enim coſinus arcuum parvorum, vel ſinus arcuum prope quadrantem in calculo hoc evitari non poſſint; illorum logarithmi vero in tabulis vulgaribus, etiam in amplioribus *CALLETI*, non ſatis diſtinguantur, quoniam logarithmi hi in primis ſeptem figuris decimalibus parum aut nihil differunt: confugiendum eſt ad tabulas majores, ut v. g. ad illas Gellibrandi, Pitiſci, Vlacquii, quarum poſtremas, plurimis erroribus purgatas, in *Theſauro* ſuo *logarithmorum completo* Lipſiae iterum edi curavit anno 1794 Cl. *VEGA*, ubi logarithmorum numeri ad figuras decimales decem expanduntur.

*) Monatl. Correſpondenz. Julius 1804, pag. 24.

Utendo itaque tabulis his, ut declinationem maximam cum accuratione aſſequi poſſimus, calculum per ſequentem concinnam abſolvemus formulam,*) in qua

$$\text{cof anguli ſubſidiarii } \phi = \frac{\sqrt{(\text{cof}^2 \tfrac{1}{2} l \sin s \sin \lambda)}}{\sin \tfrac{1}{2}(\lambda + s)}$$

Erit poſtea

$$\sin \tfrac{1}{2} p = \sin \tfrac{1}{2}(\lambda + s) \sin \phi$$

ubi littera l denotat complementum longitudinis; λ complementum latitudinis; p diſtantiam fixae a polo boreo; s obliquitatem ecliptícae mediam.

En jam calculi typum. Habemus itaque:

$l = 5^\circ\ 45'\ 42,''227$ $\quad s = 23^\circ\ 28'\ 53,''860$

$\frac{1}{2} l = 2\ 52\ 51,114$ $\quad \lambda = 23\ 56\ 17,755$

$\frac{1}{2}(s+\lambda) = 23\ 42\ 35,808$

Hinc porro

log. cof $\frac{1}{2} l$ = 9,9994507907

log. cof$^2 \frac{1}{2} l$ = 9,9989015814

log. sin s = 9,6003792668

log. sin λ = 9,6082607601

9,2075416083

9,6037708042

log. sin $\frac{1}{2}(s+\lambda)$ = 9,6043413427

log. cof ϕ = 9,9994294615 = $2^\circ\ 56'\ 10,''495$

log. sin = 8,7094800699

$\frac{1}{2}(s+\lambda)$ log. sin = 9,6043413427

$\frac{1}{2}$ p log. sin = 8,3138214126

$\frac{1}{2} p = 1^\circ\ 10'\ 48,''907$; $p = 2^\circ\ 21'\ 37,''814$

Eſt ergo Declin. med. ſtellae pol. ad annum 1690

per calcul. noſtrum . . . . . = $87^\circ\ 38'\ 22,''186$

ex *FLAMSTEEDII* obſervationib. invenimus . = 87 38 19, 030

erit motus propr. 100 ann. = + 3,''156

motus hic igitur annuus in declinatione eſt . . . . + 0,''03156

quo declinatio hujus fixae augetur.

*) Materiem hanc fuſius pertractarunt conſueto geometrico acumine fratres *Joannes* et *Daniel Bernoulli* in duabus, de ſtella polari, diſſertationibus in *Nouveaux Mémoires de l'Acad. Roy. des Sc. de Pruſſe* 1774, p. 370, 1775, p. 280, et 1778, p. 203. Vide etiam *Lambert*, *Berliner aſtron. Jahrbuch* 1778 p. 205 et *Delambre*, Conn. des tems, année 1789, p. 205.

Videtur et propterea ſtella polaris ad recentiores uſus geographicos valde commendanda, quod motus proprius adeo exiguus, ideoque ejus declinatio ſemel determinata ſemper maxima cum fiducia adhiberi poteſt. Cum in determinanda fixae hujus poſitione omnem impenderim curam, gratam me obſervatoribus rem facturum exiſtimo, ſi ejusdem aſcenſiones rectas et declinationes medias ex obſervationibus meis elicitas pro variis annorum epochis hic referam.

Anni	Aſcenſio recta media Stellae polaris in arcu	Praeceſſio annua	Declinatio borealis media Stellae polaris	Praeceſſio annua cum motu proprio
1790	12° 33′ 56,″943	3′ 3,″367	88° 11′ 10,″350	19,″563
1791	12 37 0, 310	3 4, 330	88 11 29, 913	19, 559
1792	12 40 4, 640	3 5, 302	88 11 49, 472	19, 555
1793	12 43 9, 942	3 6, 282	88 12 9, 027	19, 550
1794	12 46 16, 224	3 7, 271	88 12 28, 577	19, 546
1795	12 49 23, 495	3 8, 269	88 12 48, 123	19, 542
1796	12 52 31, 764	3 9, 276	88 13 7, 665	19, 538
1797	12 55 41, 040	3 10, 292	88 13 27, 203	19, 534
1798	12 58 51, 332	3 11, 317	88 13 46, 737	19, 529
1799	13 2 2, 649	3 12, 351	88 14 6, 266	19, 525
1800	13 5 15, 000	3 13, 395	88 14 25, 791	19, 521
1801	13 8 28, 395	3 14, 447	88 14 45, 312	19, 517
1802	13 11 42, 842	3 15, 508	88 15 4, 829	19, 513
1803	13 14 58, 350	3 16, 580	88 15 24, 342	19, 508
1804	13 18 14, 930	3 17, 663	88 15 43, 850	19, 504
1805	13 21 32, 593	3 18, 755	88 16 3, 354	19, 500
1806	13 24 51, 348	3 19, 857	88 16 22, 854	19, 495
1807	13 28 11, 205	3 20, 969	88 16 42, 349	19, 491
1808	13 31 32, 174	3 22, 091	88 17 1, 840	19, 486
1809	13 34 54, 265	3 23, 224	88 17 21, 326	19, 482
1810	13 38 17, 489	3 24, 367	88 17 40, 808	19, 477
1811	13 41 41, 856	3 25, 520	88 18 0, 285	19, 472
1812	13 45 7, 376	3 26, 684	88 18 19, 757	19, 467
1813	13 48 34, 060	3 27, 860	88 18 39, 224	19, 463
1814	13 52 1, 920	3 29, 047	88 18 58, 687	19, 458
1815	13 55 30, 967	3 30, 244	88 19 18, 145	19, 453
1816	13 59 1, 211	3 31, 453	88 19 37, 598	19, 448
1817	14 2 32, 664	3 32, 673	88 19 57, 046	19, 443
1818	14 6 5, 337	3 33, 906	88 20 16, 489	19, 438
1819	14 9 39, 243	3 35, 156	88 20 35, 927	19, 433
1820	14 13 14, 393	3 36, 404	88 20 55, 360	19, 428

De Aberratione Lucis.

De fixarum a tellure diſtantia, adeoque de illarum parallaxi, multum et diu apud aſtronomos ſuperiorum ſeculorum diſputatum eſt; alii eam majorem, alii minorem putabant, nonnulli infinitam. Supponitur vulgo, diametrum orbitae terreſtris ad diſtantiam fixarum ne minimam quidem habere rationem, et ipſum orbem annuum eſſe inſtar puncti reſpectu ſphaerae fixarum, ideoque angulum, quem dicimus, *parallaxis annuae*, plane evaneſcere, et nullis organis humanitus eſſe obſervabilem.

Ad horum argumentorum veritatem perſpiciendam, et obſervationibus comprobandam, jam ab anno 1582 ad noſtrum usque aevum orbis magni parallaxin rimati ſunt aſtronomi. Quam ſubtiliſſimae indaginis materiem inprimis inquiſiverunt *TYCHO-BRAHEVS*, *RICCIOLVS*, *ROBERTVS HOOKIVS* et *FLAMSTEEDIVS*, ſed ſucceſſu haud felici.

Cum ſub finem anni 1725 Clar. *SAM. MOLYNEVX* et *BRADLEJVS* inſtrumentis amplioribus et accuratioribus, ad explorandam hanc latitudinum parallaxin ſe denuo accinxiſſent: detexit primus Cl. *BRADLEJVS* circa 17 Decembris 1725 ſtellam γ Draconis a vertice auſtrum verſus ſenſim recedere; illius igitur latitudinem decreſcere 20″ usque ad initium Martii 1726. A loco menſis Junii 20″ in Septemtrionem divertebat ſtella, illiusque latitudo creſcebat, ita ut differentia latitudinum inter loca menſe Martio et Septembri notata eſſet 39″.

Comparanti motus hos apparentes ſtellae Draconis cum parallaxis annuae legibus, illico patebit, illos parallaxis hujus effectibus e diametro eſſe oppoſitos. Nam maxima latitudo in oppoſitionem, et minima in conjunctionem incidere debuiſſet; etenim ſecundum obſervationes Cl. *BRADLEJI* maximae et minimae latitudines circa Martium et Septembrem contigerunt. Sed tunc temporis ſtella erat in quadraturis, ubi aequales debuiſſent eſſe latitudines, quae in illo ſitu parallaxi carent.

Poſt varia tentamina, inexſpectatas et paradoxas prorſus haſce ſtellarum variationes explicandi, tandem feliciter invenit Cl. *BRADLEJVS*, veram cauſam horum phaenomenorum eſſe *ſucceſſivam luminis propagationem*, a Cl. *OLAO ROEMERO* circa annum 1675 primum ope eclipſium ſatellitum Jovis detectam. Obſervatum enim eſt, eclipſes ſatellitum citius contingere circa oppoſitionem, quam circa conjunctionem Jovis, illasque eo tardius cerni, quo magis

terra a Jove digreditur. Conjiciebatur inde, lucem diametrum orbitae terreſtris tempore 16' 15" percurrere, unde colligebatur, celeritatem mediam telluris in orbita ſua ad luminis celeritatem eſſe in ratione 1 : 10313. Tanta vero eſt haec celeritas, ut 8 minutorum tempore ſpatium 20618 ſemidiametrorum terrae abſolvat; ideoque tempore unius minuti ſecundi, 43 ſemidiametros terrae percurrat.

Hinc objectum, quod antea occultum erat, non eo momento, quo lucem emittere incipit, cernitur, ſed tardius, et quidem eo tardius, quo major eſt diſtantia inter objectum et ſpectatorem. Si autem objectum vel ſpectator moveatur, vel ſi objectum et ſpectator ſimul moveantur, objectum non vero in loco, ſed apparenti obſervabitur; componitur nempe motus objecti ex motu ſuo et motu lucis. Inde jam autumari licet, ſtellas propter ſucceſſivam hanc luminis propagationem et telluris motum annuum in locis apparentibus, non veris, debere obſervari. Mutatio, quam propagatio haec lucis ſtellarum locis infert, dicitur *Aberratio luminis*, illamque cum *BRADLEJI* obſervationibus perfecte conſpirare demonſtrabimus. Ex ſequentibus ſimul pateſcet, parallaxin orbis magni eſſe nullam, vel admodum exiguam: nam theoria BRADLEJANA tam accurate cum obſervationibus congruit, ut parallaxis annua unius minuti ſecundi, ſi locum habuiſſet, diſcerni potuiſſet.

In plerisque aſtronomiae elementis oſtendi ſolet, motum *apparentem* fixarum, a luminis propagatione ſucceſſiva et motu telluris in orbita ſua oriundum, conſiſtere in eo, ut ſtella quaevis intra anni ſpatium parvam ellipſin in coelo videatur deſcribere, cujus axis major, in ſphaera coeleſti arcum conſtantem 40 minutorum ſecundorum, plano ecliptices ſemper parallelum, metiatur, minor vero pro ratione ſinus latitudinis fixae varietur. Ideoque axis major hujus ellipſis pro omnibus ſtellis aequat maximam aberrationem. Verſatur autem ſtella in axe majori tempore conjunctionis et oppoſitionis cum ſole; in axe minori, tempore quadraturarum. Patet inde, polum eclipticae deſcribere circulum, cujus diameter eſt 40". Stellae autem eo oblongiores deſcribere videbuntur ellipſes, quo minor eſt illarum latitudo. Latitudines vero ſtellarum carent aberratione, ſed aberratio longitudinis pro ſole ſemper eſt 20"; ideoque longitudini ſolis obſervatae conſtanter 20" addi debent, ut habeatur locus ſolis verus.

Hae, ut ſolent vocari, *aberrationum ellipſes*, omnes ſtellarum mutationes apparentes, per luminis aberrationis effectus productas, reſpectu ecliptices, et reſpectu aequatoris, perbelle explicant, et il-

larum ope aberrationes in aſcenſionem rectam et in declinationem computantur, aliaque exinde deducuntur, quae in hoc negotio aſtronomorum praxi ſubveniunt. Sunt, qui miſſis his aberrationum ellipſibus, doctrinam hanc potius analytice pertractent. Sed demonſtrationibus his ſuperſedeo, cum illas partim in Cl. *DE LA LANDE Aſtronomia* lib. XVII, in omnium manibus verſante, partim in aliorum praelectionibus aſtronomicis ulterius liceat perſpicere. Accedo potius ad ipſam aberrationis maximae quantitatis explorationem.

Obſervationes Cl. *BRADLEJI*, quae luminis aberrationem inveniendi locum dedere, et quae in *Transactionibus philoſophicis ſocietatis ſcientiarum reg. Londinens.* anni 1728 No. 406 primum in lucem prodiere, hucusque a nemine, quod ſciam, ad calculum exquiſitiorem ſunt revocatae. Omnes aſtronomi in eo acquieſcebant, aberrationis ellipſis 40 minutorum ſecundorum, hoc eſt, maximam et *abſolutam* aberrationis quantitatem numero rotundo $\pm$ 20″ eſſe, quae denique ad eclipticam vel ad aequatorem relata, varias, prout ſtellarum ſitus poſtulat, aberrationum inaequalitates, calculo definiendas, producit. Exploranda itaque nobis inprimis erat vera et abſoluta aberrationis hujus quantitas.

Refert Cl. *BRADLEJVS* in praedicta ſua diſſertatione, ſe Sectore zenithali Grahamiano duodecimpedali maximas per anni decurſum inveniſſe variationes in declinatione 39″ per diſtantias a vertice ſtellae γ Draconis; 36″ per η Urſae majoris; 34″ per α Caſſiopeae; 23″ per α Perſei; 25″ per τ Perſei; 39″ per β Draconis; 19″ per 35 Camelopardalis; 16″ per Capellam; unde aberrationis ellipſeos axem concludebat per

γ Draconis	40,″4
η Urſae majoris . . .	40, 4
α Caſſiopeae	40, 8
α Perſei	40, 2
τ Perſei	41, 0
β Draconis	40, 2
35 Camelopardalis . .	40, 2
Capellam	40, 0

Inſtituto denuo hoc calculo, elementis caſtigatis, et ex recentiorum obſervationibus repetitis, eum aliquantisper a BRADLEJANO abludere comperimus; ſequentem vero calculi methodum ſecuti ſumus. Demonſtratur paſſim (*DE LA LANDE Aſtron.* § 2868) maximam in declinationem aberrationem eſſe:

$$\frac{20'' \cos \text{Æ} * \sin \text{decl.} *}{\sin \text{arg. aberr. max.}}$$

hinc, data aberratione maxima in declinationem $= \alpha$, erit aberratio abſoluta:

$$\frac{\alpha \sin \text{arg. aberr. max.}}{\cos \text{Æ} * \sin \text{declin.} *}$$

Poteſt haec aberratio abſoluta etiam per aliam formulam definiri, in qua dantur: longitudo ſideris, latitudo $= \lambda$, angulus poſitionis $= \pi$. Erit tunc aberratio abſoluta:

$$\frac{\alpha}{\cos x \sin \pi - \sin x \cos \pi \sin \lambda}$$

Quantitas x eſt long. * — long. ☉. Utraque formula eosdem exhibet valores pro aberratione maxima, prout in elencho ſequenti, appoſitis omnibus elementis, conſpiciuntur.

Stellarum poſitiones mediae ad initium anni 1728.

Nomina Stellarum	Longitudo				Latitudo				Aſcenſio recta				Declin. bor.			
γ Draconis	8^s	24°	11′	23″	74°	57′	28″		267°	34′	40″		51°	31′	59″	
η Urſae maj.	5	23	6	27	54	23	45		204	11	49		50	40	49	
α Caſſiopeae	1	4	0	42	46	36	20		6	19	9		55	2	31	
β Draconis	8	8	8	50	75	18	30		261	4	37		52	30	58	
α Perſei	1	28	17	40	30	5	55		46	16	14		48	51	50	
τ Perſei	1	24	7	40	34	20	43		38	47	37		51	37	27	
Capella	2	18	3	38	22	51	44		74	9	45		45	40	43	
35 Camelopard.	2	27	50	27	28	6	5		86	31	35		51	33	3	

Hinc peracto calculo

Nomina Stellarum	Ang. poſition.			Arg. max. aberrat.				Obſerv. *Bradl.*	Reduct. ad polum eclipt.
γ Draconis	3°	43′	12″	11^s	28°	2′	29″	39″	40,″378
η Urſae maj.	38	37	30	10	7	36	32	36	40, 423
α Caſſiopeae	35	11	51	2	19	51	48	34	41, 085
β Draconis	14	6	5	11	22	45	24	39	40, 236
α Perſei	18	33	42	3	24	29	20	23	40, 201
τ Perſei	22	5	30	3	18	23	43	25	38, 820
Capella	6	46	36	5	1	3	6	16	39, 658
35 Camelopard.	1	34	5	5	24	30	53	19	38, 281

Rejectis

Rejectis tribus poſtremis valoribus, a ceteris ultra modum discrepantibus, erit aberratio abſoluta, quae ex obſervationibus BRADLEJANIS prodit, ſumpto medio arithmetico = 20,"232. Cl. *BRADLEJVS* in disquiſitione ſua, in *Transact. philoſ. anglic.* pag. 655 relata, affirmat, ſe complures aliarum ſtellarum obſervationes comparaſſe; omnes vero in eo conſpiraſſe, valorem maximum intra 40" et 41" ſemper convenire; unde eundem 40,"5, adeoque aberrationem abſolutam 20,"25 ſtatuit.

Seculum eſt, quod primi comitis Jovis eclipſes Cl. *ROEMERO* luminis propagationem et velocitatem detegendi anſam praebuerunt; cujus vero quantitatem Cl. *BRADLEJVS* obſervationibus ſuis exquiſitioribus accuratius ſtabiliverat. Sed viſum eſt Cl. *DE LA PLACE*, in ſtatu praeſenti, in quem theoria primi ſatellitis Jovis nunc dierum redacta eſt, et ſpectato numero ſatis magno harum eclipſium, ultra ſemiſeculum per tubos achromaticos obſervatarum, idem phaenomenon ad determinandam aberrationem, et majori quidem cum accuratione, quam per obſervationem directam inſervire poſſe.

Ad ſummi hujus geometrae nutum Cl. *DELAMBRE* ex innumeris hujus ſatellitis deliquiis quantitatem hanc abſolutam aberrationis invenit = 20,"255 *), quae cum valore BRADLEJANO congruit ad unguem, ut tuto in poſterum aberratio haec maxima 20,"255 ſtatui et adhiberi poſſit; quapropter et tabulae noſtrae univerſales, ad calcem hujus operis pag. 501 relatae, pro quantitate hac conſtructae ſunt. Ut prodeat autem, quantum determinatio haec cum obſervationibus autographis Cl. *BRADLEJI* conſentiat, easdem per tabulas has computare et cum obſervationibus, quot exſtant, conferre placuit, prout tabula ſequens in conſpectum dabit. Discrimen leve, quod ſupereſt, absque injuria, et fatente ipſo *BRADLEJO*, in obſervationis aut inſtrumenti vitium conjici poteſt; nam differentiae maximae, nunquam ultra unum minutum ſecundum adſurgentes, et plerumque in contrarias vergentes partes, plane evaneſcunt, ut etiam ſigna medii erroris appoſita demonſtrant.

*) Mécan. céleſte, Tom. IV. Praefat. pag. XI. LA LANDE Aſtronom. Tabul. pag. 238.

Aberratio in declinationem ſtellae γ Draconis

a Cl. BRADLEJO annis 1727 et 1728 obſervata et cum tabulis noſtris comparata.

Tempus obſervationis			Arg. aberrat. ſeu locus ⊙			Aberratio in decl. calculat.	Differ. Aberr. calcul.	Differ. Aberr. Obſerv. a *Bradl.*	Error
1727	October	31	7ˢ	7°	32′	+ 15,″11	4,″42	4,″5	+ 0,″08
	Novbr.	28	8	5	47	+ 7, 41	12, 12	11, 5	— 0, 62
	Decbr.	17	8	25	6	+ 1, 02	18, 51	17, 5	— 1, 01
1728	Januar.	8	9	17	32	— 6, 51	26, 04	25, 0	— 1, 04
	Febr.	4	10	15	0	— 14, 30	33, 83	34, 0	+ 0, 17
	—	21	11	2	10	— 17, 61	37, 14	38, 0	+ 0, 86
	Mart.	18	11	28	8	— 19, 57	39, 10	39, 0	— 0, 10
	April.	4	0	14	54	— 18, 74	38, 27	37, 0	— 1, 27
	—	17	0	27	38	— 17, 02	36, 55	36, 0	— 0, 55
	Maj.	17	1	26	40	— 10, 18	29, 71	28, 5	— 1, 21
	Jun.	16	2	25	23	— 0, 91	20, 44	18, 5	— 1, 94
	—	26	3	4	55	+ 2, 33	17, 20	17, 5	+ 0, 30
	Jul.	14	3	22	5	+ 7, 97	11, 56	11, 5	— 0, 06
	Aug.	13	4	20	49	+ 15, 57	3, 96	4, 0	+ 0, 04
	Septbr.	17	5	24	44	+ 19, 53	0, 00	0, 0	0, 00

Error medius . . . . . — 0,″42

Aberratio in declinationem ſtellae η Urſae majoris

a Cl. BRADLEJO annis 1727 et 1728 obſervata et cum tabulis noſtris comparata.

Tempus obſervationis			Arg. aberrat. ſeu locus ⊙			Aberrat. in decl. calculat.	Differ. Aberr. calcul.	Differ. Aberr. Obſerv. a *Bradl.*	Error
1727	Septbr.	25	6ˢ	1°	49′	+ 10,″55	28,″59	29,″5	+ 0,″91
	Octbr.	5	6	11	40	+ 7, 88	25, 92	24, 5	— 1, 42
	—	27	7	3	32	+ 1, 28	19, 32	19, 5	+ 0, 18
	Novbr.	22	7	29	42	+ 6, 79	11, 25	11, 5	+ 0, 25
	Decbr.	25	9	3	16	— 14, 91	3, 13	4, 0	+ 0, 87
1728	Jan.	28	10	7	54	— 18, 04	0, 00	0, 0	0, 00
	Febr.	28	11	9	11	— 15, 36	2, 68	2, 0	— 0, 68
	April.	1	0	11	58	— 7, 79	10, 25	11, 5	+ 1, 25
	—	27	1	7	21	— 0, 09	17, 95	18, 5	+ 0, 55
	Maj.	17	1	26	40	+ 5, 91	23, 40	24, 5	+ 1, 10
	Jun.	17	2	26	20	+ 13, 55	31, 59	32, 0	+ 0, 41
	Jul.	6	3	14	28	+ 16, 59	34, 63	35, 0	+ 0, 37
	—	28	4	5	28	+ 18, 03	36, 07	36, 0	— 0, 07
	Aug.	13	4	20	49	+ 17, 56	35, 60	35, 0	— 0, 60
	October	1	6	8	28	+ 8, 77	26, 81	26, 5	— 0, 31

Error medius . . . . . + 0,″19

Ad ſupputandos luminis aberrationis effectus in aſcenſionem rectam, et in declinationem, a compluribus aſtronomis variae formulae trigonometricae exploratae et expoſitae ſunt. Inter has nobis illae, a doctiſſimis viris *LAMBERT* et *DELAMBRE* propoſitae, praecipuae et maxime commendandae viſae ſunt. Pro aberratione in aſcenſionem rectam elegantiſſimam dedit expreſſionem Cl. *DELAMBRE*, quam mirandum eſt effugiſſe perſpicacitatem Cl. *LAMBERT*, cum ejusdem ferme indolis formulas, nutationis effectus pertractando, invenerit, quae cum aberrationum formulis maximam habent affinitatem; et cum utrique hi effectus eodem prorſus modo graphice per ellipſin repraeſentari poſſint: per analogiam formulae hae facile inde derivari et conjici potuiſſent.

Formula Cl. *DELAMBRE* pro aberratione in aſcenſionem rectam eſt:

$$(-\text{aberr. max. cof. obl. eclipt. cof. } Æ * \text{ cof. long. } \odot - \\ - \text{aberr. max. ſin } Æ * \text{ ſin long. } \odot) \text{ ſec. decl.} *$$

vel

$$[-\tfrac{1}{2} \text{ aberr. max. } (1 + \text{cof. obl. eclipt.}) \text{ cof } (Æ * - \odot) + \\ + \tfrac{1}{2} \text{ aberr. max. } (1 - \text{cof. obl. eclipt.}) \text{ cof } (Æ * + \odot)] \text{ ſec. decl.} *$$

Adeant, qui demonſtrationem hujus formulae inſpicere cupiunt, *Conn. des tems, année 1788* pag. 229; *CAGNOLI Trigonometrie* § 790 ſeq. *DE LA LANDE Aſtronomie* § 2867 ſeq. Nos interea de methodo breviſſima et commodiſſima, formulam hanc in tabulas redigendi, differemus.

Coëfficientes numerici hujus formulae, ab abſoluta et maxima luminis aberratione, et ab ecliptices obliquitate pendent; quae, cum ipſa per longioris temporis intervallum mutetur, coëfficientes quoque aliquantulum mutari neceſſe eſt. Cum ſupra jam quantitas abſoluta et maxima aberrationis 20,″255 ſtabilita ſit, et cum mutatio obliquitatis eclipticae non niſi poſt longiſſimam annorum ſeriem ſenſibilem in his coëfficientibus variationem parere poſſit, poſita obliquitate eclipticae numero rotundo 23° 28′ 0″, quae ſecundum tabulas noſtras ſolis recentiſſimas anno 1792 reſpondet, erit formula noſtra numerica pro aberratione in aſcenſionem rectam:

$$[-19,''41734 \text{ cof } (Æ * - \odot) - 0,''837627 \text{ cof } (Æ * + \odot)] \text{ ſec. decl.} *$$

Aſſumpta vero obliquitate eclipticae 23° 27′ 0″, quae anno 1903 reſpondebit, erit pro hoc tempore:

$$[-19,''41855 \text{ cof } (Æ * - \odot) \; 0,''836454 \text{ cof } (Æ * + \odot)] \text{ ſec. decl.} *,$$

Patet igitur, variationem unius minuti in obliquitate eclipticae per 116 annos non majorem in formula noſtra producere mutationem, quam:

$$[-0,''00121 \operatorname{cof}(\text{Æ}\ast - \odot) + 0,00117 \operatorname{cof}(\text{Æ}\ast + \odot)] \text{ ſec. decl.}\ast$$

Tabula itaque noſtra I pag. 501 primam formulae partem 19,''41734 cof (Æ$\ast$ — $\odot$) exhibet; tabula II ad ſecundam exaequata eſt partem 0,''837627 cof (Æ$\ast$ + $\odot$), ſepoſito factore *ſec. decl.*$\ast$, per quem quantitates, ex binis his tabulis depromtae, multiplicandae veniunt. Sed et haec opella tolli poteſt, adhibendo idem hoc artificium, quo jam pag. 28 hujus operis in ſubſidium calculi variationis ſecularis uſi ſumus. Introducendo nimirum angulum quemdam auxiliarem γ, et ponendo ſec. decl. $=$ 10 cof γ; has vices ſubſtituendo, formula noſtra abit in ſequentem:

$$10\,[-19,''41734 \operatorname{cof}(\text{Æ}\ast - \odot)\operatorname{cof}\gamma + 0,''837627 \operatorname{cof}(\text{Æ}\ast + \odot)\operatorname{cof}\gamma]$$

et reducendo per formulas trigonometricas notiſſimas, producta coſinus, ad ſummam coſinuum obtinebimus:

$$5 \times \left\{\begin{array}{ll} -19,''41734 & \operatorname{cof}(\text{Æ}\ast - \odot + \gamma) \\ -19,''41734 & \operatorname{cof}(\text{Æ}\ast - \odot - \gamma) \\ +\ 0,''837627 & \operatorname{cof}(\text{Æ}\ast + \odot + \gamma) \\ +\ 0,''837627 & \operatorname{cof}(\text{Æ}\ast + \odot - \gamma) \end{array}\right\}$$

Angulus γ in ſubſidium adductus (ut in loco citato jam indicavimus) neceſſario ſub duplici ſpecie exhiberi debet; nam pro declinationibus majoribus, *ſec. decl.* $>$ *10 rad.* coſinus γ radium ſuperaret, quod impoſſibile eſt: in hoc caſu a 75 declinationis gradu angulum auxiliarem δ poſuimus ita, ut *ſec. decl.* $=$ *100 cof* δ. Quotiescunque igitur angulus hic δ adhibetur, quantitates, ejus beneficio repertae, per 100 multiplicandae ſunt. Adjecta eſt porro, ad calculi commoditatem, cuivis coëfficienti quantitas conſtans 20'', quo artificio quantitates, in tabulas reductae, poſitivae redditae, et ad ſervandum factorem decimalem valde opportunum per 2 diviſae ſunt. Hinc formula noſtra in ſequentem transmutabitur:

$$10 \times \left\{\begin{array}{ll} -9,''70867 & \operatorname{cof}(\text{Æ}\ast - \odot + \gamma) \\ -9,''70867 & \operatorname{cof}(\text{Æ}\ast - \odot - \gamma) \\ +\ 0,''418814 & \operatorname{cof}(\text{Æ}\ast + \odot + \gamma) \\ +\ 0,''418814 & \operatorname{cof}(\text{Æ}\ast + \odot - \gamma) \end{array}\right\}$$

Ad ejusdem normam tabulae I et II pag. 90 et 91 conſtructae ſunt. Summa igitur omnium quantitatum adjectarum, ut tabulae exhibeant valores poſitivos, eſt $4 \times 20'' = 80''$.

Non poſſumus hoc loco praetermittere calculi beneficium quoddam indicare, quod formula ſupra tradita ſuppeditat, et quod calculatoribus non poteſt interdum non eſſe exoptatum. Cum effectus, quem declinatio fixae in aberrationis quantitatem per formulam noſtram expreſſam infert, prorſus ſublatus ſit, et quantitas haec duntaxat per *ſec. decl.* * multiplicanda veniat: prona ſe offert reductio aberrationis in aſcenſionem rectam unius fixae, ad aberrationem alterius fixae ejusdem aſcenſionis rectae, ſed diverſae declinationis. Nam in hoc caſu ſufficit, declinationum ſecantes invicem dividere, et aberrationis quantitatem unius ſtellae per hunc quotientem multiplicare. Sic e. g. fixae η Ceti et β Andromedae eandem habent aſcenſionem rectam, ſed diverſam declinationem. Sint itaque ex aberrationis tabulis η Ceti, aberrationes in aſcenſionem rectam pro β Andromedae deducendae; quantitates hujus tabulae tantummodo multiplicandae erunt per $1,191 = \frac{\text{ſec } 34^\circ\ 33,'7}{\text{ſec } 11^\circ\ 14,'3} = \frac{\text{coſ } 11^\circ\ 14,'3}{\text{coſ } 34^\circ\ 33,'7}$, ut habeantur quantitates aberrationis in aſcenſionem rectam pro fixa β Andromedae.

Porro: Fixae ejusdem declinationis, ſed denominationis oppoſitae, hoc eſt, una auſtralis, borealis altera, quarum aſcenſiones rectae 180° ſeu VI^s diſſident, eandem habent aberrationem tum in aſcenſionem rectam, tum in declinationem, ſed ſignis algebraicis contrariis, ut e. g. 59 χ Tauri et 20 σ Scorpii.

Pro aberratione luminis in declinationem ex Cl. *DELAMBRE* ſequentem habemus formulam:

aberr. max. ſin obl. ecl. coſ long. $\odot$ coſ decl. * — aberr. max. (coſ AR* ſin long. $\odot$ — — coſ obl. ecl. ſin AR * ſin long. $\odot$) ſin decl. *

et decompoſitis productis ſinuum et coſinuum:

$$\begin{aligned} &- \tfrac{1}{2} \text{ aberr. max. ſin obl. ecl. coſ } (\odot + \text{decl.} *) - \\ &- \tfrac{1}{2} \text{ aberr. max. ſin obl. ecl. coſ } (\odot - \text{decl.} *) \\ &+ [\tfrac{1}{2} \text{ aberr. max. } (1 + \text{coſ obl. ecl.}) \text{ ſin } (\text{AR.} * - \odot) - \\ &- \tfrac{1}{2} \text{ aberr. max. } (1 - \text{coſ obl. ecl.}) \text{ ſin } (\text{AR.} * + \odot)] \text{ ſin decl.} * \end{aligned}$$

Subſtituendo ut ſupra valores numericos, habemus pro effectu aberrationis luminis in declinationem:

$$\begin{aligned} &- 4,''03293 \text{ coſ } (\odot + \text{decl.} *) - 4,''03293 \text{ coſ } (\odot - \text{decl.} *) \\ &[-19,''41734 \text{ coſ } (\text{AR.} * - \odot + \text{III}^s) + 0,''837627 \text{ coſ } (\text{AR.} * + \odot + \text{III}^s) \text{ ſin decl.} * \end{aligned}$$

Primas duas hujus formulae partes exhibet tabula noſtra III, pag. 502 hujus operis; poſteriores autem tabulae I et II pag. 501, ubi etiam praeceptum ad calcem harum tabularum monet, quantitates, ex tabulis his excerptas, per ſinum declinationis multiplicandas eſſe.

Opera haec itidem eodem artificio, quo ſupra, ſublevari poteſt. Eſt enim:

$$\text{ſin}(AR_* - \odot)\,\text{ſin decl.}_* = \tfrac{1}{2}\text{cof}(AR_* - \odot - \text{decl.}_*) - \tfrac{1}{2}\text{cof}(AR_* - \odot + \text{decl.}_*)$$

et

$$\text{ſin}(AR_* + \odot)\,\text{ſin decl.}_* = \tfrac{1}{2}\text{cof}(AR_* + \odot - \text{decl.}_*) - \tfrac{1}{2}\text{cof}(AR_* + \odot + \text{decl.}_*)$$

adeoque aberratio in declinationem:

$$-4,''03293\,\text{cof}(\odot + \text{decl.}_*) - 4,''03293\,\text{cof}(\odot - \text{decl.}_*)$$
$$+9,''70867\,\text{cof}(AR_* - \odot - \text{decl.}_*) - 9,''70867\,\text{cof}(AR_* - \odot + \text{decl.}_*)$$
$$-0,''418814\,\text{cof}(AR_* + \odot - \text{decl.}_*) + 0,''418814\,\text{cof}(AR_* + \odot + \text{decl.}_*)$$

Conſtat igitur omnis formula ex partibus ſex, quarum quatuor poſtremas ex tabulis, pro aberratione in aſcenſionem rectam jam ſupputatis, ſumere licet, ſi memineris, in tabularum harum uſu bis ſigna algebraica contraria adhibenda, vel quod eodem redit, imo vero prorſus neceſſarium eſt, tabularum harum argumentis 180° ſeu VI addenda eſſe ſigna, quoniam tabulae hae ita conſtructae ſunt, ut ſemper quantitates exhibeant poſitivas. Hinc formula noſtra, in hunc finem digeſta, ita ſe habebit:

$$-9,''70867\,\text{cof}(AR_* - \odot - \text{decl.}_* + \text{VI}^s) - 9,''70867\,\text{cof}(AR_* - \odot + \text{decl.}_*)$$
$$+0,''418814\,\text{cof}(AR_* + \odot - \text{decl.}_* + \text{VI}^s) + 0,''418814\,\text{cof}(AR_* + \odot + \text{decl.}_*)$$
$$-4,''03293\,\text{cof}(\odot + \text{decl.}_*) - 4,''03293\,\text{cof}(\odot - \text{decl.}_*)$$

Primas duas hujus formulae partes exhibet tabula I, pag. 90, tertiam et quartam partem tabula II, pag. 91, quintam et ſextam tabula III, pag. 92, Ad quantitates tabularum I et II, pag. 90 et 91, adjectae ſunt, ut ſupra jam commemoravimus, quantitates conſtantes 20″, in tabula vero III, pag. 92, tantummodo 10″. Summa itaque omnium ſex quantitatum adjectarum eſt $(4.20'') + (2.10'') = 100''$, ſumma quantitatum, ex tabulis his deſumtarum, ſemper ſigno negativo adhibenda.

Reſtat perpendendum, qualem ſubitura ſit formula noſtra mutationem, ſi declinatio fixae auſtralis eſt. Videtur primo obtutu pro explorato accipi poſſe, in hoc caſu ſinum declinationis negativum evadere, coſinum vero poſitivum. Nam $\text{cof} - \text{decl.} = \text{cof} + \text{decl.}$ Sed hoc neutiquam, imo vero contrarium habere locum, illico perſpicies, ſi memineris, formulam allatam nihil aliud eſſe, quam formulam differentialem trigonometriae ſphaericae, et primitus variationem lateris trianguli ſphaerici, nimirum *diſtantiae polaris*, non illam *declinationis* exhibuiſſe. Si formula noſtra pro diſtantia fixarum

a polo compoſita eſſet, recte et probe regula de ſignorum algebraicorum mutatione pro lineis trigonometricis proſequenda fuiſſet. Sed reminiſcendum eſt, formulam noſtram ad ſiderum declinationem accommodatam, adeoque effectus aberrationis pro fixis, declinationes auſtrales habentibus, prorſus eſſe oppoſitos. Pone v. g., aberrationis effectus divertere ſidus ad boreum; declinatio borealis perinde augetur, minuetur vero declinatio auſtralis. Signa itaque algebraica aberrationis totalis vertenda ſunt in contraria. Patet porro, coëfficientes formulae noſtrae, qui per *ſin. declin.* multiplicandi ſunt, duplicem ſignorum horum mutationem ſubire; quapropter appoſitius viſum eſt, ſigna haec pro declinatione auſtrali ſervare, in quo caſu quantitates tabulae III, pag. 92, quae per *coſin. declin.* multiplicantur, unicam tantum patiuntur ſignorum mutationem, vertendo nimirum ſigna algebraica $\pm$ in $\mp$ vel quod eodem redit, addendo argumento ejusdem tabulae 180° vel VI^s, prout praeceptum tabulae huic praefixum monet.

Aberratio in longitudinem eſt:

— aberr. max. coſ. elong. * ſec. latit. * †)

Notiſſimum eſt, elongationem fixae eſſe $=$ long. $\odot$ — long. *. Confugiamus hic iterum ad angulum auxiliarem γ et δ, et ponamus, ut modo fecimus, 10 coſ latit. $=$ ſec γ vel 10 coſ decl $=$ ſec γ. Poterit eadem haec tabula, pag. 88 et 89 inſerta, ad inveniendum hunc angulum ſubſidiarium prodeſſe, dummodo pro argumento, declinationis loco, latitudinem adhibueris. Suppoſitis his, aberratio in longitudinem erit:

10 × (—aberr. max. coſ elong. * coſ γ $=$ 10 × [$-\frac{1}{2}$ aberr. max. coſ (elong. * $+\gamma$) — — $\frac{1}{2}$ aberr. max. coſ (elong. * $-\gamma$)], id eſt:

10 × [— 10,"1275 coſ (elong. * $+\gamma$) — 10,"1275 coſ (elong. * $-\gamma$)]

Ad hujus formulae rationem conſtructa eſt Tabula IV, pag. 93.

Tandem eaedem hae tabulae aberrationem in latitudinem facile ſubminiſtrare poſſunt. Eſt enim aberrationis in latitudinem effectus:

— aberr. max. ſin elong. * ſin latit. * $=$ — 10,"1275 coſ (elong. * — latit. *) + + 10,"1275 (elong. * + latit. *)

Addantur ad argumentum (elong. * + latit. *) VI ſigna, ſeu 180°, ut ſignum algebraicum fiat negativum; erit aberratio in latitudinem:

— 10,"1275 coſ (elong. * — latitud. *) — 10,"1275 coſ (elong. * + latit. * + VI^s)

Latitudo, ſive ſit borealis, ſive ſit auſtralis, in ſignum aberrationis nullam infert mutationem, quoniam in caſu poſteriori duplex ſignorum mutatio locum habet. Nam cum ſin. latit. auſtr. negative ſumendus ſit, omnis etiam quantitas ſigno contrario ſumenda eſt.

Nunc hisce praeſtructis tabulas noſtras hic praemittemus, illarum uſum per praecepta trademus, et ne quid in ambiguo haereat, paradigmatis et calculorum typis illuſtrabimus.

†) Cagnoli Traité de Trigonometrie, § 786; de la Lande Aſtronomie, § 2846.

Angulus γ

in ſubſidium calculi aberrationis luminis in aſcenſionem rectam et in declinationem vel in longitudinem et in latitudinem.

10 Coſin. declinationis = ſecant. γ
vel 10 Coſin. latitudinis = ſecant. γ

Arg. decl. vel latitud.	Angulus γ + II^s	Diff.	Arg. decl. vel latitud.	Angulus γ + II^s	Diff.	Arg. decl. vel latitud.	Angulus γ + II^s	Diff.
°	° ′	′	°	° ′	′	° ′	° ′	′
0	24 15, 7	0, 1	30	23 22, 1	4, 1	60 0	18 27, 8	10, 8
1	24 15, 6	0, 2	31	23 18, 0	4, 3	60 30	18 17, 0	11, 2
2	24 15, 4	0, 2	32	23 13, 7	4, 6	61 0	18 5, 8	11, 6
3	24 15, 2	0, 4	33	23 9, 1	4, 8	61 30	17 54, 2	12, 1
4	24 14, 8	0, 5	34	23 4, 3	5, 0	62 0	17 42, 1	12, 6
5	24 14, 3	0, 5	35	22 59, 3	5, 3	62 30	17 29, 5	13, 0
6	24 13, 8	0, 7	36	22 54, 0	5, 6	63 0	17 16, 5	13, 6
7	24 13, 1	0, 8	37	22 48, 4	5, 9	63 30	17 2, 9	14, 1
8	24 12, 3	1, 0	38	22 42, 5	6, 1	64 0	16 48, 8	14, 7
9	24 11, 3	1, 0	39	22 36, 4	6, 4	64 30	16 34, 1	15, 3
10	24 10, 3	1, 1	40	22 30, 0	6, 9	65 0	16 18, 8	16, 0
11	24 9, 2	1, 2	41	22 23, 1	7, 1	65 30	16 2, 8	16, 8
12	24 8, 0	1, 4	42	22 16, 0	7, 5	66 0	15 46, 0	17, 5
13	24 6, 6	1, 5	43	22 8, 5	8, 0	66 30	15 28, 5	18, 2
14	24 5, 1	1, 6	44	22 0, 5	8, 3	67 0	15 10, 3	19, 1
15	24 3, 5	1, 8	45	21 52, 2	8, 8	67 30	14 51, 2	20, 2
16	24 1, 7	1, 9	46	21 43, 4	9, 3	68 0	14 31, 0	21, 1
17	23 59, 8	2, 0	47	21 34, 1	9, 8	68 30	14 9, 9	22, 1
18	23 57, 8	2, 1	48	21 24, 3	10, 3	69 0	13 47, 8	23, 3
19	23 55, 7	2, 2	49	21 14, 0	11, 0	69 30	13 24, 5	24, 5
20	23 53, 5	2, 4	50	21 3, 0	11, 6	70 0	13 0, 0	25, 9
21	23 51, 1	2, 6	51	20 51, 4	12, 3	70 30	12 34, 1	27, 4
22	23 48, 5	2, 7	52	20 39, 1	13, 0	71 0	12 6, 7	29, 0
23	23 45, 8	2, 8	53	20 26, 1	13, 8	71 30	11 37, 7	30, 6
24	23 43, 0	3, 1	54	20 12, 3	14, 7	72 0	11 7, 1	32, 5
25	23 39, 9	3, 2	55	19 57, 6	15, 7	72 30	10 34, 6	34, 6
26	23 36, 7	3, 4	56	19 41, 9	16, 7	73 0	10 0, 0	36, 9
27	23 33, 3	3, 5	57	19 25, 2	17, 9	73 30	9 23, 1	39, 4
28	23 29, 8	3, 7	58	19 7, 3	19, 0	74 0	9 43, 7	42, 2
29	23 26, 1	4, 0	59	18 48, 3	20, 5	74 30	8 1, 5	45, 3
30	23 22, 1		60	18 27, 8		75 0	7 16, 2	

Angulus δ

in ſubſidium calculi aberrationis luminis in aſcenſionem rectam et in declinationem, vel in longitudinem et in latitudinem.

100 Coſin. declinationis = ſecant. δ
vel 100 Coſin. latitudinis = ſecant. δ

Arg. decl. vel latitud.	Angulus δ + II^{s}	Diff.	Arg. decl. vel latitud.	Angulus δ + II^{s}	Diff.	Arg. decl. vel latitud.	Angulus δ + I^{s}	Diff.
° ′	° ′	′	° ′	° ′	′	° ′	° ′	′
75 0	27 47, 1	4, 4	86 10	21 23, 9	23, 7	88 55	28 4, 0	181, 5
75 30	27 42, 7	4, 8	86 20	21 0, 2	25, 9	89 0	25 2, 5	41, 0
76 0	27 37, 9	5, 2	86 30	20 34, 3	13, 9	89 1	24 21, 5	42, 6
76 30	27 32, 7	5, 6	86 35	20 20, 4	14, 6	89 2	23 38, 9	44, 6
77 0	27 27, 1	6, 0	86 40	20 5, 8	15, 4	89 3	22 54, 3	46, 7
77 30	27 21, 1	6, 5	86 45	19 50, 4	16, 2	89 4	22 7, 6	48, 8
78 0	27 14, 6	7, 1	86 50	19 34, 2	17, 0	89 5	21 18, 8	51, 3
78 30	27 7, 5	7, 8	86 55	19 17, 2	18, 1	89 6	20 27, 5	54, 0
79 0	26 59, 7	8, 4	87 0	18 59, 1	19, 1	89 7	19 33, 5	56, 7
79 30	26 51, 3	9, 4	87 5	18 40, 0	20, 2	89 8	18 36, 8	59, 8
80 0	26 41, 9	10, 3	87 10	18 19, 8	21, 6	89 9	17 37, 0	63, 3
80 30	26 31, 6	11, 5	87 15	17 58, 2	22, 9	89 10	16 33, 8	67, 1
81 0	26 20, 1	12, 9	87 20	17 35, 3	24, 4	89 11	15 26, 6	71, 2
81 30	26 7, 2	14, 4	87 25	17 10, 9	26, 1	89 12	14 15, 4	76, 1
82 0	25 52, 8	16, 4	87 30	16 44, 8	27, 9	89 13	12 59, 5	81, 2
82 30	25 36, 4	18, 8	87 35	16 16, 9	30, 0	89 14	11 38, 3	87, 2
83 0	25 17, 6	21, 7	87 40	15 46, 9	32, 3	89 15	10 11, 1	94, 0
83 30	24 55, 9	25, 3	87 45	15 14, 6	34, 8	89 16	8 37, 1	102, 0
84 0	24 30, 6	9, 4	87 50	14 39, 8	37, 8	89 17	6 55, 1	111, 4
84 10	24 21, 2	10, 0	87 55	14 2, 0	41, 1	89 18	5 3, 7	122, 6
84 20	24 11, 2	10, 5	88 0	13 20, 9	44, 7	89 19	3 1, 1	136, 4
84 30	24 0, 7	11, 3	88 5	12 36, 2	49, 1	89 20	0 44, 7	154, 1
84 40	23 49, 4	11, 9	88 10	11 47, 1	54, 0	89 21	28 10, 6	177, 5
84 50	23 37, 5	12, 8	88 15	10 53, 1	59, 7	89 22	25 13, 1	211, 2
85 0	23 24, 7	13, 7	88 20	9 53, 4	66, 5	89 23	21 41, 9	266, 1
85 10	23 11, 0	14, 6	88 25	8 46, 9	74, 4	89 24	17 15, 8	386, 8
85 20	22 56, 4	15, 8	88 30	7 32, 5	84, 0	89 25	10 49, 0	649, 0
85 30	22 40, 6	17, 0	88 35	6 8, 5	95, 6	89 26	0 0, 0	
85 40	22 23, 6	18, 3	88 40	4 32, 9	109, 9			
85 50	22 5, 3	19, 8	88 45	2 43, 0	128, 0			
86 0	21 45, 5		88 50	0 35, 0				

ABERRATIONIS TABVLAE VNIVERSALES.

TABVLA I.

Argumenta pro Aberratione in Aſcenſionem rectam:

$\left(\text{Æ.}* - \text{long.}\odot \begin{matrix}+\gamma\\+\delta\end{matrix}\right)$ et $\left(\text{Æ.}* - \text{long.}\odot \begin{matrix}-\gamma\\-\delta\end{matrix}\right)$

Argumenta pro Aberratione in Declinationem:

(Æ.$*$—long. $\odot$ + decl.$*$) et (Æ.$*$ — long. $\odot$ — decl.$*$ + VI ſign.)

Grad.	0ˢ	1ˢ	2ˢ	3ˢ	4ˢ	5ˢ	
0	10,″291	11,″592	15,″146	20,″000	24,″854	28,″408	30
1	10, 293	11, 678	15, 293	20, 170	25, 000	28, 492	29
2	10, 297	11, 766	15, 442	20, 339	25, 145	28, 573	28
3	10, 305	11, 857	15, 592	20, 508	25, 288	28, 651	27
4	10, 315	11, 951	15, 744	20, 677	25, 429	28, 726	26
5	10, 328	12, 047	15, 897	20, 846	25, 569	28, 799	25
6	10, 344	12, 145	16, 051	21, 015	25, 707	28, 870	24
7	10, 363	12, 246	16, 206	21, 183	25, 843	28, 937	23
8	10, 386	12, 349	16, 363	21, 351	25, 978	29, 002	22
9	10, 411	12, 455	16, 520	21, 519	26, 110	29, 064	21
10	10, 439	12, 562	16, 679	21, 686	26, 241	29, 124	20
11	10, 470	12, 672	16, 839	21, 853	26, 370	29, 180	19
12	10, 503	12, 785	17, 000	22, 019	26, 497	29, 234	18
13	10, 540	12, 899	17, 161	22, 184	26, 622	29, 285	17
14	10, 579	13, 016	17, 324	22, 349	26, 745	29, 333	16
15	10, 622	13, 135	17, 487	22, 513	26, 865	29, 378	15
16	10, 667	13, 255	17, 651	22, 676	26, 984	29, 421	14
17	10, 715	13, 378	17, 816	22, 839	27, 101	29, 460	13
18	10, 766	13, 503	17, 981	23, 000	27, 215	29, 497	12
19	10, 820	13, 630	18, 147	23, 161	27, 328	29, 530	11
20	10, 876	13, 759	18, 314	23, 321	27, 438	29, 561	10
21	10, 936	13, 890	18, 481	23, 480	27, 545	29, 589	9
22	10, 998	14, 022	18, 649	23, 637	27, 651	29, 614	8
23	11, 063	14, 157	18, 817	23, 794	27, 754	29, 637	7
24	11, 130	14, 293	18, 985	23, 949	27, 855	29, 656	6
25	11, 201	14, 431	19, 154	24, 103	27, 953	29, 672	5
26	11, 274	14, 571	19, 323	24, 256	28, 049	29, 685	4
27	11, 349	14, 712	19, 492	24, 408	28, 143	29, 695	3
28	11, 427	14, 855	19, 661	24, 558	28, 234	29, 703	2
29	11, 508	15, 000	19, 830	24, 707	28, 322	29, 707	1
30	11, 592	15, 146	20, 000	24, 854	28, 408	29, 709	0
	11ˢ	10ˢ	9ˢ	8ˢ	7ˢ	6ˢ	Grad.

ABERRATIONIS TABVLAE VNIVERSALES.

TABVLA II.

Argumenta pro Aberratione in Aſcenſionem rectam:

$\left(\text{Æ}.* + \text{long.} \odot \begin{smallmatrix} + \gamma \\ + \delta \end{smallmatrix}\right)$ et $\left(\text{Æ}.* + \text{long.} \odot \begin{smallmatrix} - \gamma \\ - \delta \end{smallmatrix}\right)$

Argumenta pro Aberratione in Declinationem:

(Æ. + * long. ⊙ + decl. *) et (Æ. * + long. ⊙ − decl. * + VI ſign.)

Grad.	0s	1s	2s	3s	4s	5s	
0	20,"419	20,"363	20,"210	20,"000	19,"790	19,"637	30
1	20, 419	20, 359	20, 203	19, 992	19, 784	19, 633	29
2	20, 419	20, 355	20, 197	19, 985	19, 778	19, 630	28
3	20, 418	20, 351	20, 190	19, 978	19, 772	19, 627	27
4	20, 418	20, 347	20, 184	19, 971	19, 766	19, 623	26
5	20, 417	20, 343	20, 177	19, 963	19, 760	19, 620	25
6	20, 417	20, 339	20, 171	19, 956	19, 754	19, 617	24
7	20, 416	20, 335	20, 164	19, 949	19, 748	19, 614	23
8	20, 415	20, 330	20, 157	19, 941	19, 742	19, 611	22
9	20, 414	20, 326	20, 150	19, 934	19, 736	19, 609	21
10	20, 413	20, 321	20, 143	19, 927	19, 731	19, 606	20
11	20, 411	20, 316	20, 137	19, 920	19, 725	19, 604	19
12	20, 410	20, 311	20, 130	19, 913	19, 720	19, 602	18
13	20, 408	20, 307	20, 122	19, 906	19, 714	19, 599	17
14	20, 407	20, 302	20, 116	19, 898	19, 709	19, 597	16
15	20, 405	20, 296	20, 109	19, 891	19, 704	19, 595	15
16	20, 403	20, 291	20, 102	19, 884	19, 698	19, 593	14
17	20, 401	20, 286	20, 094	19, 877	19, 693	19, 592	13
18	20, 398	20, 280	20, 087	19, 870	19, 689	19, 590	12
19	20, 396	20, 275	20, 080	19, 863	19, 684	19, 589	11
20	20, 394	20, 269	20, 073	19, 857	19, 679	19, 587	10
21	20, 391	20, 264	20, 066	19, 850	19, 674	19, 586	9
22	20, 389	20, 258	20, 059	19, 843	19, 670	19, 585	8
23	20, 386	20, 252	20, 051	19, 836	19, 665	19, 584	7
24	20, 383	20, 246	20, 044	19, 829	19, 661	19, 583	6
25	20, 380	20, 240	20, 037	19, 823	19, 657	19, 583	5
26	20, 377	20, 234	20, 029	19, 816	19, 653	19, 582	4
27	20, 373	20, 228	20, 022	19, 810	19, 649	19, 582	3
28	20, 370	20, 222	20, 015	19, 803	19, 645	19, 581	2
29	20, 367	20, 216	20, 008	19, 797	19, 641	19, 581	1
30	20, 363	20, 210	20, 000	19, 790	19, 637	19, 581	0
	11s	10s	9s	8s	7s	6s	Grad.

ABERRATIONIS TABVLAE VNIVERSALES.

TABVLA III.

Argumenta pro Aberratione in Declinationem:

(long. ⊙ + decl. ✱) et (long. ⊙ — decl. ✱)

Si Declinatio auſtralis, his argumentis VI ſigna adde.

Grad.	0ˢ	1ˢ	2ˢ	3ˢ	4ˢ	5ˢ	
0	5,"967	6,"507	7,"983	10,"000	12,"017	13,"493	30
1	5, 968	6, 543	8, 045	10, 070	12, 077	13, 527	29
2	5, 970	6, 580	8, 107	10, 141	12, 137	13, 561	28
3	5, 973	6, 618	8, 169	10, 211	12, 196	13, 593	27
4	5, 977	6, 657	8, 232	10, 281	12, 255	13, 625	26
5	5, 982	6, 696	8, 296	10, 351	12, 313	13, 656	25
6	5, 990	6, 737	8, 360	10, 421	12, 370	13, 684	24
7	5, 997	6, 779	8, 424	10, 491	12, 427	13, 712	23
8	6, 006	6, 822	8, 489	10, 561	12, 483	13, 739	22
9	6, 017	6, 865	8, 555	10, 631	12, 538	13, 766	21
10	6, 028	6, 910	8, 621	10, 700	12, 592	13, 790	20
11	6, 041	6, 956	8, 687	10, 769	12, 646	13, 813	19
12	6, 055	7, 003	8, 754	10, 838	12, 699	13, 836	18
13	6, 070	7, 050	8, 821	10, 907	12, 751	13, 857	17
14	6, 087	7, 099	8, 888	10, 976	12, 802	13, 877	16
15	6, 104	7, 148	8, 956	11, 044	12, 852	13, 896	15
16	6, 123	7, 198	9, 024	11, 112	12, 901	13, 913	14
17	6, 143	7, 249	9, 093	11, 179	12, 950	13, 930	13
18	6, 164	7, 301	9, 162	11, 246	12, 997	13, 945	12
19	6, 187	7, 354	9, 231	11, 313	13, 044	13, 959	11
20	6, 210	7, 408	9, 300	11, 379	13, 090	13, 972	10
21	6, 234	7, 462	9, 369	11, 445	13, 134	13, 983	9
22	6, 261	7, 517	9, 439	11, 511	13, 178	13, 994	8
23	6, 288	7, 573	9, 509	11, 576	13, 221	14, 003	7
24	6, 316	7, 630	9, 579	11, 640	13, 263	14, 010	6
25	6, 344	7, 687	9, 649	11, 704	13, 304	14, 018	5
26	6, 375	7, 745	9, 719	11, 768	13, 343	14, 023	4
27	6, 407	7, 804	9, 789	11, 831	13, 382	14, 027	3
28	6, 439	7, 863	9, 859	11, 893	13, 420	14, 030	2
29	6, 473	7, 923	9, 930	11, 955	13, 457	14, 032	1
30	6, 507	7, 983	10, 000	12, 017	13, 493	14, 033	0
	11ˢ	10ˢ	9ˢ	8ˢ	7ˢ	6ˢ	Grad.

ABERRATIONIS TABVLAE VNIVERSALES.

TABVLA IV.

Argumenta pro Aberratione in Longitudinem:

(long. ☉ — long. ✱ $\begin{matrix}+\gamma\\+\aleph\end{matrix}$) et (long. ☉ — long. ✱ $\begin{matrix}-\gamma\\-\aleph\end{matrix}$)

Argumenta pro Aberratione in Latitudinem:

(long. ☉ — long. ✱ + latit. ✱ + VI sign.) et (long. ☉ — long. ✱ — lat. ✱)

Grad.	0ˢ 6ˢ — +	Diff.	1ˢ 7ˢ — +	Diff.	2ˢ 8ˢ — +	Diff.	
0	10,"128	0,"002	8,"771	0,"089	5,"064	0,"153	30
1	10, 126	0, 004	8, 682	0, 092	4, 911	0, 155	29
2	10, 122	0, 007	8, 590	0, 095	4, 756	0, 157	28
3	10, 115	0, 011	8, 495	0, 098	4, 599	0, 159	27
4	10, 104	0, 015	8, 397	0, 101	4, 440	0, 160	26
5	10, 089	0, 018	8, 296	0, 103	4, 280	0, 161	25
6	10, 071	0, 021	8, 193	0, 105	4, 119	0, 162	24
7	10, 050	0, 023	8, 088	0, 107	3, 957	0, 163	23
8	10, 027	0, 025	7, 981	0, 110	3, 794	0, 165	22
9	10, 002	0, 028	7, 871	0, 113	3, 629	0, 166	21
10	9, 974	0, 032	7, 758	0, 115	3, 463	0, 167	20
11	9, 942	0, 035	7, 643	0, 117	3, 296	0, 168	19
12	9, 907	0, 038	7, 526	0, 119	3, 128	0, 168	18
13	9, 869	0, 042	7, 407	0, 122	2, 960	0, 169	17
14	9, 827	0, 045	7, 285	0, 124	2, 791	0, 170	16
15	9, 782	0, 047	7, 161	0, 126	2, 621	0, 170	15
16	9, 735	0, 051	7, 035	0, 128	2, 451	0, 171	14
17	9, 684	0, 053	6, 907	0, 130	2, 280	0, 173	13
18	9, 631	0, 056	6, 777	0, 132	2, 107	0, 174	12
19	9, 575	0, 058	6, 645	0, 134	1, 933	0, 174	11
20	9, 517	0, 061	6, 511	0, 136	1, 759	0, 174	10
21	9, 456	0, 065	6, 375	0, 138	1, 585	0, 175	9
22	9, 391	0, 068	6, 237	0, 140	1, 410	0, 175	8
23	9, 323	0, 071	6, 097	0, 143	1, 235	0, 176	7
24	9, 252	0, 073	5, 954	0, 145	1, 059	0, 176	6
25	9, 179	0, 076	5, 809	0, 147	0, 883	0, 177	5
26	9, 103	0, 079	5, 662	0, 148	0, 706	0, 176	4
27	9, 024	0, 082	5, 514	0, 149	0, 530	0, 176	3
28	8, 942	0, 084	5, 365	0, 150	0, 354	0, 177	2
29	8, 858	0, 087	5, 215	0, 151	0, 177	0, 177	1
30	8, 771		5, 064		0, 000		0
	— + 11ˢ 5ˢ	Diff.	— + 10ˢ 4ˢ	Diff.	— + 9ˢ 3ˢ	Diff.	Grad.

Problema I.

Data temporis epocha, ſeu data longitudine ſolis, aſcenſione recta et declinatione fixae, invenire effectum aberrationis luminis in aſcenſionem rectam, per tabulas I et II, pag. 90 et 91.

1) Cum declinatione fixae data, ſive boreali, ſive auſtrali, quaere ſine diſcrimine in tabula pag. 88 vel 89 angulum γ vel δ.

2) Ad aſcenſionem rectam fixae datam adde, et ab illa etiam ſubtrahe angulum hunc inventum γ vel δ.

3) Ab hac ſumma et ab hac differentia ſubtrahe longitudinem ſolis pro temporis momento dato. Quae remanent, argumenta duo ſunt, ad uſum tabulae I, pag. 90.

4) Ad eandem ſummam et ad eandem differentiam adde longitudinem ſolis. Aggregata erunt argumenta duo utendo tabula II, pag. 91.

5) Cum argumentis his binis primis quaere in tabula I bis, et cum argumentis duobus poſtremis in tabula II etiam bis, numeros competentes. Conjice quatuor has quantitates in unam ſummam, a qua ſubtrahe 80"; ſi autem minor eſt 80", eandem ab 80" detrahe, et reſiduo praefige ſignum algebraicum negativum.

6) Reſiduum multiplica per 10, ſi angulum ſubſidiarium γ adhibueris; per 100 vero, ſi angulo δ uſus fueris. Habebis quantitatem aberrationis in aſcenſionem rectam pro natura ſigni algebraici aſcenſioni rectae *mediae*, ex fixarum catalogo deſumtae, applicandam, ut habeatur aſcenſio recta *apparens*, ſeu *viſa* fixae, hoc eſt, per aberrationis luminis effectum opticum a vero loco dimota.

Exemplum I.

Sit effectus aberrationis luminis in aſcenſionem rectam α Coronae borealis die 2 Auguſti 1800 inveniendus. Invenimus pro dato tempore aſcenſionem rectam hujus fixae $7^s\ 21^\circ\ 33',7$, ejusdem declinationem borealem $27^\circ\ 23,'7$, longitudinem ſolis $4^s\ 10^\circ$ et angulum ſubſidiarium γ, $2^s\ 23^\circ\ 31,'9$.

Erit porro:

AR. $\aleph$ = 7^s 21° 33,'7
Ang. ſubſ. $\gamma\pm$] = 2 23 31, 9

10 15 5, 6 / 4 28 1, 8 } − Long. ⊙ { Arg. 1 = 6^s 5° 5,'6 / Arg. 2 = 0 18 1, 8 } Tab. I.

10 15 5, 6 / 4 28 1, 8 } + Long. ⊙ { Arg. 3 = 2 25 5, 6 / Arg. 4 = 9 8 1, 8 } Tab. II.

Arg. 1 = 29,"670
Arg. 2 = 10, 768
Arg. 3 = 20, 036
Arg. 4 = 20, 059
Summa = 80, 533
80, 000

\+ 0,"533 × 10 = + 5,"33 = Aberr. in AR. α Coron. bor.

Exemplum II.

Quaeratur aberratio luminis in aſcenſionem rectam ſtellae polaris die 23 Julii 1800. Eſt aſcenſio recta pro dato tempore 0^s 13° 7,'0, ejusdem declinatio borealis 88° 14,'6, longitudo ſolis 4^s 0°, et angulus ſubſidiarius δ, 2^s 10° 58',2.

AR. $\aleph$ = 0^s 13° 7,'0
Ang. ſubſ. $\delta\pm$] = 2 10 58, 2

2 24 5, 2 / 10 2 8, 8 } − Long. ⊙ { Arg. 1 = 10^s 24° 5,'2 / Arg. 2 = 6 2 8, 8 } Tab. I.

2 24 5, 2 / 10 2 8, 8 } + Long. ⊙ { Arg. 3 = 6 24 5, 2 / Arg. 4 = 2 2 8, 8 } Tab. II.

Arg. 1 = 12,"136
Arg. 2 = 29, 702
Arg. 3 = 19, 617
Arg. 4 = 20, 196
Summa = 81, 651
80, 000

\+ 1,"651 × 100 = + 165,"1 = Aber. in AR. Stellae pol.

Exemplum III.

Sit quantitas aberrationis in aſcenſionem rectam α Lyrae die 28 Julii 1800 computanda. Invenimus ex catalogo noſtro aſcenſionem rectam ad hoc tempus 9^s 7° 32,'8, declinationem borealem 38° 36,'4, longitudinem ſolis 4^s 5°, et angulum ſubſidiarium γ, 2^s 22° 38,'8.

AR. $\aleph$ = 9^s 7° 32,'8
Ang. ſubſ. $\gamma\pm$] = 2 22 38, 8

0 0 11, 6 / 6 14 54, 0 } − Long. ⊙ { Arg. 1 = 7^s 25° 11,'6 / Arg. 2 = 2 9 54, 0 } Tab. I.

0 0 11, 6 / 6 14 54, 0 } + Long. ⊙ { Arg. 3 = 4 5 11, 6 / Arg. 4 = 10 19 54, 0 } Tab. II.

Arg. 1 = 25,"542
Arg. 2 = 16, 662
Arg. 3 = 19, 759
Arg. 4 = 20 321
Summa = 82, 284
80, 000

\+ 2, 284 × 10 = + 22,"84 = Aberrat. in AR. α Lyrae.

Exemplum IV.

Quaeratur effectus aberrationis luminis in aſcenſionem rectam α Piſcis auſtrini die 6 Maji 1800. Aſcenſio recta hujus ſtellae eſt 11ˢ 11° 38,'7, ejusdem declinatio auſtralis 30° 40,'5, longitudo ſolis 1ˢ 15°, et angulus ſubſidiarius γ, 2ˢ 23° 19,'3.

AR.* = 11ˢ 11° 38,'7
Ang. ſubſ. γ ±] = 2 23 19, 3

2 4 58, 0' — Long. ⊙ { Arg. 1 = 0ˢ 19° 58,'0' Tab. I.
8 18 19, 4ſ { Arg. 2 = 7 3 19, 4,

2 4 58, 0' + Long. ⊙ { Arg. 3 = 3 19 58, 0' Tab. II.
8 18 19, 4ſ { Arg. 4 = 10 3 19, 4ſ

Arg. 1 = 10,"874
Arg. 2 = 28, 113
Arg. 3 = 19, 857
Arg. 4 = 20, 230
Summa = 79, 074
80, 000
— 0, 926 × 10 = — 9,"26 = Aber. in AR. α Piſc. auſtr.

Problema II.

Data longitudine ſolis, aſcenſione recta et declinatione fixae, invenire luminis aberrationis effectum in declinationem per tabulas I, II et III pag. 90, 91 et 92.

1) Ad datam aſcenſionem rectam fixae adde ejusdem declinationem.

2) Ab aſcenſione recta data ſubtrahe eandem declinationem, reſiduo adde vel ſubtrahe 180° ſeu VIˢ.

3) A duabus his quantitatibus ſubtrahe longitudinem ſolis, et habebis argumenta duo pro tabula I.

4) Ad easdem adde locum ſolis, et habebis argumenta duo pro tabula II.

5) Adde et ſubtrahe declinationem fixae a longitudine ſolis, et habebis pro tabula III argumenta duo, quibus, ſi declinatio auſtralis eſt, VI ſigna addenda ſunt.

6) Quaere cum ſex his argumentis, in tribus tabulis bis, numeros ſex reſpondentes; a quorum ſumma deme 100°; vel ſi illa minor eſt, ſubtrahe hanc ſummam a 100°. Reſiduum erit quantitas quaeſita aberrationis in declinationem, poſitiva in caſu priori, negativa in poſteriori.

Exem-

Exemplum I.

Sit effectus aberrationis luminis in declinationem ſtellae polaris eodem tempore, ut ſupra, et eisdem elementis, inveniendus.

AR. * =		0ˢ	13°	7,'0	. . . . .	0ˢ	13°	7,'0
decl. * =	+	2	28	14, 6	. . . .	— 2	28	14, 6
		3	11	21, 6		9	14	52, 4
						+ 6		
						3	14	52, 4
long. ☉ =	∓]4	0			. . . . .	∓]4	0	
Arg. 1 =		11ˢ	11°	21,'6		Arg. 2 = 11ˢ	14°	52,'4 Tab. I.
Arg. 3 =		7	11	21, 6		Arg. 4 = 7	14	52, 4 Tab. II.
long. ☉ =		4ˢ	0°	0,'0	. . . . .	4ˢ	0°	0,'0
decl. * =	+	2	28	14, 6	. . . .	— 2	28	14, 4
Arg. 5 =		6ˢ	28°	14,'6		Arg. 6 = 1ˢ	1°	45,'4 Tab. III.

Arg. 1	=	10,"800
Arg. 2	=	10, 627
Arg. 3	=	19, 686
Arg. 4	=	19, 705
Arg. 5	=	13, 553
Arg. 6	=	6, 571
Summa	=	80, 942
		100, 000
	—	19, 058 = Aberrat. in declin. ſtellae polaris.

Exemplum II.

Quaeratur aberratio luminis in declinationem α Lyrae, eodem tempore, ut ſupra.

AR. * =		9ˢ	7°	32,'8	. . . . .	9ˢ	7°	32,'8
decl. * =	+	1	8	36, 4	. . . .	— 1	8	56, 4
		10	16	9, 2		7	28	56, 4
						+ 6		
						1	28	56, 4
long. ☉ =	∓]4	5			. . . .	∓]4	5	
Arg. 1 =		6ˢ	11°	9,'2		Arg. 2 = 9ˢ	23°	56,'4 Tab. I.
Arg. 3 =		2	21	9,, 2		Arg. 4 = 6	3	56, 4 Tab. II.
long. ☉ =		4ˢ	5°	0,'0	. . . . .	4ˢ	5°	0,'0
decl. * =	+	1	8	36, 4	. . . .	— 1	8	36, 4
Arg. 5 =		5ˢ	13°	36,'4		Arg. 6 = 2ˢ	26°	23,'6 Tab. III.

Arg. 1	=	29,"522
Arg. 2	=	16, 061
Arg. 3	=	20, 065
Arg. 4	=	19, 582
Arg. 5	=	13, 869
Arg. 6	=	9, 747
Summa	=	108, 846
		100, 000
	+	8,"846 = Aberrat. in declin. α Lyrae.

Exemplum III.

Sit quantitas aberrationis in declinationem α Piſcis auſtrini, eodem tempore, ut ſupra, ſupputanda.

AR. * =		11ˢ	11°	38.'7	. . . .	11ˢ	11°	38.'7	
decl. * =	+	1	0	40, 5	. . .	— 1	0	40, 5	
		0	12	19, 2		10	10	58, 2	
						+ 6			
						4	10	58, 2	
long.⊙ =	∓]	1	15		. . . .	∓] 1	15		
Arg. 1 =		10ˢ	27°	19,'2		Arg. 2 = 2ˢ	25°	58,'2	Tab. I.
Arg. 3 =		1	27	19, 2		Arg. 4 = 5	25	58, 2	Tab. II.
long.⊙ =		1ˢ	15°	0,'0	. . . .	1ˢ	15°	0,'0	
decl. * =	+	1	0	40, 5	. . .	— 1	0	40, 5	
		2	15	40, 5		0	14	19, 5	
	+	6			. . .	+ 6			
Arg. 5 =		8ˢ	15°	40,'5		Arg. 6 = 6ˢ	14°	19,'5	Tab. III.

Arg. 1	=	11,"829
Arg. 2	=	19, 317
Arg. 3	=	20, 226
Arg. 4	=	19, 582
Arg. 5	=	10, 998
Arg. 6	=	13, 908
Summa	=	95. 860
		100, 000
	—	4,"140 = Aberratio in declin. α Piſcis auſtrini.

Problema III.

Data longitudine ſolis, longitudine et latitudine fixae, invenire per tabulam IV pag. 93 effectum aberrationis luminis in longitudinem.

1) Quaere elongationem fixae propoſitae, ſubtrahendo nimirum longitudinem ſtellae a longitudine ſolis.

2) Aſſumta latitudine fixae pro argumento, excerpe e tabula pag. 88 vel 89 angulum ſubſidiarium γ vel δ.

3) Summa et differentia hujus anguli auxiliarii cum elongatione fixae faciunt argumenta, cum quibus ingredere tabulam IV pag. 93.

4) Carpe numeros argumentis his reſpondentes, illorum ſummam algebraicam multiplica per 10, ſi angulo γ, per 100, ſi angulo δ uſus fueris. Productum dabit effectum aberrationis in longitudinem fixae propoſitae.

Exemplum I.

Quaerendus ſit effectus aberrationis luminis in longitudinem ſtellae polaris die 1 Januarii 1800. Eſt longitudo hujus fixae pro dato tempore $2^s\ 25^\circ\ 46,'2$, ejusdem latitudo borealis $66^\circ\ 4,'6$, longitudo ſolis $9^s\ 11^\circ$, et angulus ſubſidiarius γ inventus $2^s\ 15^\circ\ 43,'6$.

long. ☉	=	9^s	11°			
long. *	=	2	25	46,'2		
elong. *	=	6	15	13, 8		
ang. ſubſ. $\gamma = \pm$]		2	15	43, 6		
Arg. 1	=	9^s	0°	57, 4	. . .	− 0,"169
Arg. 2	=	3	29	30, 2	. . .	+ 4, 988 Tab. IV.

+ 4,"819 × 10 = + 48,"19 = Aberr. in longitud. ſtellae polaris.

Exemplum II.

Quaeritur aberratio luminis in longitudinem α Aquilae, die 20 Aprilis 1800. Invenimus longitudinem fixae $9^s\ 28^\circ\ 57,'9$, ejusdem latitudinem borealem $29^\circ\ 18,'6$, longitudinem ſolis $1^s\ 0^\circ$ et angulum ſubſidiarium γ, $2^s\ 23^\circ\ 24,'9$.

long. ☉	=		1^s	0°		
long. *	=	−	9	28	57,'9	
elong. *	=		3	1	2, 1	
ang. ſubſ. $\gamma = \pm$]			2	23	24, 9	
Arg. 1	=		5^s	24	27, 0	. . + 10,"078 Tab. IV.
Arg. 2	=		0	7	37, 2	. . − 10, 036

+ 0, 042 × 10 = + 0,"42 Aberrat. in longit. α Aquilae.

Exemplum III.

Sit invenienda quantitas aberrationis luminis in longitudinem α Piſcis auſtrini, die 23 Maji 1800. Longitudo hujus fixae eſt pro dato tempore $11^s\ 1^\circ\ 2,'7$, ejusdem latitudo $21^\circ\ 6,'3$, longitudo ſolis $2^s\ 2^\circ$, et angulus ſubſidiarius γ, $2^s\ 23^\circ\ 50,'8$.

long. ☉	=		2^s	2°		
long. *	=	−	11	1	2,'7	
elong. *	=		3	0	57, 3	
ang. ſubſ. $\gamma = \pm$]			2	23	50, 8	
Arg. 1	=		5^s	24	48, 1	. . . + 10,"085
Arg. 2	=		0	7	6, 5	. . . − 10, 048

+ 0,"037 × 10 = + 0,"37 = Aberr. in long. α Piſcis auſtrini.

Problema IV.

Datis, quae ſupra poſita ſunt, invenire per tabulam IV, pag. 93 effectum aberrationis lucis in latitudinem.

1) Quaere elongationem fixae = long. ☉ — long. ✱ .

2) Accipe ſummam et differentiam elongationis cum latitudine fixae propoſitae; ſummae adde 180° vel VI^s, et conſequeris argumenta duo pro tabula IV. Latitudo ſive borealis, ſive auſtralis, ſine diſcrimine adhibenda eſt, et nullam in ſigno algebraico aberrationis quantitatis affert mutationem.

3) Excerpe e tabula IV numeros his argumentis reſpondentes, dabit illorum ſumma aberrationis quantitatem in latitudinem quaeſitam.

Exemplum I.

Sit aberratio luminis in latitudinem ſtellae polaris, pro eodem tempore et cum eisdem elementis, ut ſupra, determinanda.

elong. ✱ =		6^s	15°	13,'8		
latit. ✱ =] ∓	2	6	4, 6			
Arg. 1 =		4^s	9°	9,'2	. . . .	+ 6,"396
		8	21	18, 4		
	+ 6					
Arg. 2 =		2^s	21°	18,'4	. . . .	— 1, 531

+ 4,"865 = Aberr. in latit. ſtellae polaris.

Exemplum II.

Quaeratur effectus aberrationis in latitudinem α Aquilae eisdem elementis et eodem tempore, ut ſupra.

elong. ✱ =		3^s	1°	2,'1		
latit. ✱ =] ∓	0	29	18. 6			
Arg. 1 =		2	1°	43, 5	. . . . .	— 4,"802
		4	0	20, 7	. . . .	
	+ 6					
Arg. 2 =		10^s	0°	20,'7	. . . .	— 5, 117

— 9,"919 = Aberr. in latit. α Aquilae.

Exemplum III.

Sit quantitas aberrationis luminis in latitudinem α Piſcis auſtrini eodem tempore, ut ſupra, inveſtiganda.

elong. ✱ =		3^s	0°	57,'3		
latit. ✱ =] ∓	0	21	6, 3			
Arg. 1 =		2^s	9°	51,'0	. . . .	— 3,"488
		3	22	3, 6		
	+ 6					
Arg. 2 =		9^s	22°	3,'6	. . . .	— 3, 802

— 7, 290 = Aberr. in latit. α Piſc. auſtr.

Problema V.

Invenire effectum aberrationis in aſcenſionem rectam per tabulas I et II, pag. 501.

1) Ab aſcenſione recta fixae aufer longitudinem ſolis; reſiduum eſt argumentum tabulae I.

2) Ad aſcenſionem rectam fixae adde longitudinem ſolis, et habes argumentum tabulae II.

3) Exquire utroque argumento numeros competentes ex tabulis quorum ſumma ducta in ſecantem declinationis ſtellae, vel diviſa per coſinum ejusdem, ſuppeditat quantitatem aberrationis in aſcenſionem rectam.

Exemplum I.

Sit aberratio in aſcenſionem rectam ſtellae polaris, eodem tempore et eisdem elementis, ut in exemplo priori pag. 95 invenienda.

AR. * = 0ˢ 13° 7,'0
long. ☉ = ♓ 4 0

Arg. 1 = 8ˢ 13° 7,'0 . . . . + 5,"639 Tab. I.
Arg. 2 = 4 13 7, 0 . . . . − 0, 572 Tab. II.

Summa = + 5,"067 Log. = 0,7047509
sec. decl. * = 1,5134327

Log. = 2,2181836 = + 165,"27 = Aberr. in AR. ſtell. pol.

Per alias tabulas hanc aberrationem ſupra pag. 95 invenimus + 165,"1

Exemplum II.

Quaeratur aberratio luminis in aſcenſionem rectam ſtellae α Piſcis auſtrini, elementis et tempore, ut in ſuperiori exemplo pag. 96.

AR. * = 11ˢ 11° 38,'7
long. ☉ ♓ 1 15

Arg. 1 = 9ˢ 26° 38, 7 . . . − 8,"708 Tab. I.
Arg. 2 = 0 26 38, 7 . . . + 0, 749 Tab. II.

Summa = − 7, 959 Log. = 0,9008585
sec. decl. * = 0,0654650

Log. = 0,9663235 = − 9,"25 = Aberr. in AR. α Piſc. auſtr.

Per alias tabulas ſupra pag. 96 — 9,"26.

Problema VI.

Invenire effectum aberrationis in declinationem per tabulas I, II, et III, pag. 501 et 502.

1) Argumentis $\mathfrak{R}$ * — long. $\odot$ + III^s et $\mathfrak{R}$ * + long. $\odot$ + III^s, habes in tabula I et II numeros, quorum ſumma algebraica, ducta in ſinum declinationis fixae, erit aberrationis quantitatis pars prior.

2) Argumentis long. $\odot$ + decl. * et long. $\odot$ — decl. *, quorum ſingulis addes VI ſigna, ſi fixae declinatio ſit auſtralis, ingredere bis tabulam III, et colliges reliquas duas partes, quae cum priori conflatae, omnem aberrationis effectum praebent.

Exemplum I.

Sit inveniendus, ut ſupra pag. 97 effectus aberrationis luminis in declinationem ſtellae polaris.

AR. * = 0^s 13° 7,'0
long. $\odot$ = ∓] 4 0

8 13° 7,'0 + III^s = 11^s 13° 7,'0 = Arg. 1 Tab. I = − 18,"582
4 13 7, 0 + III^s = 7 13 7, 0 = Arg. 2 Tab II = − 0, 612

Summa = − 19, 193 Log. = 1,2831429
Log. ſin. decl. * = 9,9997958

long. $\odot$ = 4^s 0°
decl. * = ±] 2 28 14,'6

Log. = 1,2829387 = − 19,"183

Arg. 3 = 6^s 28° 14,'6 . . . . . + 3, 553
Arg. 4 = 1 1 45, 4 . . . . . − 3, 429 } T. III

Summa = − 19, 059 = Aberratio in decl. ſtellae pol.
Haec aberratio pag. 97 inveniebatur — 19,"058

Exemplum II.

Quaeratur quantitas aberrationis in declinationem, ut ſupra pag. 98, α Piſcis auſtrini.

AR. * = 11^s 11° 38,'7
long. $\odot$ = ∓] 1 15

9^s 26° 38,'7 + III^s = 0^s 26° 38,'7 = Arg. 1 Tab. I = − 17,"356
0 26 38, 7 + III = 3 26 38, 7 = Arg. 2 Tab. II = − 0, 375

Summa = − 17, 731 Log. = 1,2487332
Log. ſin. decl. * = 9,7077165

long. $\odot$ = 1^s 15°
decl. * = ±] 1 0 40,5

Log. = 0,9564497 = − 9,"046

2 15 40,5 + VI^s = Arg. 3 = 8^s 15° 40,'5 . . . . . + 0, 997
0 14 19,5 + VI^s = Arg. 3 = 6 14 19, 5 . . . . . + 3, 907 } Tab. III

Summa = − 4, 142 = Aberr. in decl. α Piſc. auſtr.
Supra pag. 98 hanc quantitatem invenimus . . . . . — 4,"140

In calculo aberrationis luminis, quem hactenus pertractavimus, terrae orbita circularis, ejusdemque motus annuus aequabilis ſupponebatur. Jam in primis noſtris tabulis motuum ſolis, anno 1792 editis, indicavimus (pag. 144), etiamſi tum luminis, tum telluris velocitas in orbita, propemodum ubique eadem ſtatui poſſit, tamen rigore geometrico rem non ita ſe habere, cum ratio velocitatis lucis et telluris non plane eadem ſit in omnibus orbitae punctis; differentias vero, quae exinde proficiſci poſſint, tam parvi eſſe momenti, ut in calculo ſcrupuloſiſſimo tuto praeteriri queant. Sed aſtronomis quibusdam recentioribus viſum eſt, rationem, quae ex inaequalitate motus telluris in orbita elliptica in aberrationis effectum redundare poſſet, non eſſe in hodierna praxi aſtronomica contemnendam. Indagarunt itaque materiem hanc doctiſſimi viri Cl. *DE LA PLACE* et Cl. *DELAMBRE*, qualem nempe variationem inaequalis haec terrae velocitas in aberrationis effectum producere valeret, et quanam methodo calculus hic breviſſime peragendus eſſet. Disquiſitionem hanc disceptatam videre licet in *Conn. des tems*, année IX pag. 471, et année XI, pag. 344. Nos tantum in eo moramur, Cl. *DELAMBRE* ibidem demonſtraſſe, effectum hunc ex terreſtris orbitae excentricitate gigni, in aſcenſionem rectam:

$$\frac{0,''33531}{\text{cos. decl.}*} \sin (\text{Æ}* - 8^{\circ}\ 42'\ 40'')$$

in declinationem:

$$-0,''022 \cos \text{decl.}* + 0,''33531 \cos (\text{Æ}* - 8^{\circ}\ 42'\ 40'').$$

Supputetur exempli gratia effectus hic pro aberratione ſtellae polaris; invenies, eundem eſſe + 0,"83 in aſcenſionem rectam, et + 0,"33 in declinationem; ex quo conſequitur, correctiunculam hanc ſemper et ubique tuto negligi poſſe. Nam illa praetermiſſa non aliud inde in aberrationis quantitatem redundare poteſt diſcrimen, quam ut aberratio apparens, ſolita methodo ſupputata, vera 0,"83 major, et itidem declinatio 0,"33 quoque major, et quidem eadem hac quantitate ſemper inveniatur. Qui vero ſibi religioni ducunt, correctionem hanc aberrationis praetermittere, poterunt eandem, iisdem tabulis noſtris ſive univerſalibus, ſive ſpecialibus, modo perfacili aſſequi. Sufficit enim pro data fixa ex tabulis conſuetis cum argumento long. perig. ☉, quae ſecundum tabulas noſtras ſolares recentiſſimas eſt 9ˢ 9° 29', exquirere aberrationis quantitatem reſpondentem, quae, per 60 diviſa, mox dabit correctiunculam quaeſitam.

Quaeritur e. g. correctio pro aberrationis quantitate in aſcenſionem rectam, et in declinationem fixae α Tauri. Ex tabula noſtra ſpeciali aberrationis pro hac ſtella, pag. 59 hujus operis, habes pro argumento 9ˢ 9° 29′ numerum reſpondentem in aſcenſione recta = + 17,″55, et in declinatione = + 1,″72, quorum pars ſexageſima dabit correctiunculam pro aberratione in aſcenſione recta = + 0,″293, et pro hac in declinatione = + 0,″029.

Correctiunculae hae, pro quavis fixa ſemel ſupputatae, conſtantes quaſi et perennes cenſeri poſſunt, quoniam illarum argumentum per plura vix ſecula mutatur. Nam variatio annua longitudinis ſolis perigaei eſt 62″, longitudinis fixarum 50″; itaque variatio annua hujus argumenti tantummodo eſt 12″; ergo correctio haec aberrationis ſenſibiliter conſtans et permanens eſt, et per quingentorum annorum ſpatium vix aut ne vix quidem 0,″01 mutabilis.

Subduximus et exhibemus in tabula appoſita has aberrationum correctiunculas in aſcenſione recta, et in declinatione praecipuarum quarundam fixarum, quae in praxi aſtronomica curatiore maxime in uſu ſunt.

Nomina Stellarum	Correctiuncula in AR. in arcu	Correctiuncula in declinatione
γ Pegaſi	− 0,″048	+ 0,″059
α Urſae min.	+ 0, 826	+ 0, 337
α Arietis	+ 0, 125	+ 0, 099
α Ceti	+ 0, 187	− 0, 006
α Tauri	+ 0, 293	+ 0, 029
α Aurigae	+ 0, 438	+ 0, 079
β Orionis	+ 0, 301	+ 0, 041
β Tauri	+ 0, 265	+ 0, 036
α Orionis	+ 0, 327	− 0, 012
α Canis maj.	+ 0, 347	+ 0, 022
α Geminor.	+ 0, 376	− 0, 055
α Can. min.	+ 0, 325	− 0, 030
β Geminor.	+ 0, 366	− 0, 059
α Hydrae	+ 0, 254	− 0, 003
α Leonis	+ 0, 202	− 0, 079
β Leonis	+ 0, 081	− 0, 108
β Virginis	+ 0, 079	− 0, 038
α Virginis	− 0, 059	− 0, 036
α Bootis	− 0, 138	− 0, 127
α¹ Librae	− 0, 178	− 0, 053
α² Librae	− 0, 179	− 0, 053
β Urſae min.	− 0, 732	− 0, 272
α Coron. bor.	− 0, 254	− 0, 132
α Serpentis	− 0, 236	− 0, 051
α Scorpii	− 0, 301	− 0, 063
α Herculis	− 0, 318	− 0, 053
α Ophiuchi	− 0, 326	− 0, 043
α Lyrae	− 0, 425	− 0, 022
γ Aquilae	− 0, 325	− 0, 006
α Aquilae	− 0, 322	− 0, 008
β Aquilae	− 0, 318	− 0, 012
α¹ Capric.	− 0, 315	+ 0, 051
α² Capric.	− 0, 314	+ 0, 051
α Cygni	− 0, 405	+ 0, 101
α Aquarii	− 0, 213	+ 0, 028
α Piſc. auſtr.	− 0, 176	+ 0, 170
α Pegaſi	− 0, 145	+ 0, 052
α Andromed.	− 0, 058	+ 0, 135

Signum algebraicum correctionibus praefixum + denotat aſcenſionem rectam et declinationem fixae majorem, ſignum −, minorem evadere neglecta hac correctione.

Eandem hanc correctiunculam pro longitudine ſolis, ejusdem aberrationi *mediae* + 20,″255 applicandam, per ſequentem invenies tabellam; qua adhibita, obtinebis aberrationem *veram* pro orbita elliptica, quae loco ſolis addenda eſt, ut habeatur longitudo ſolis a *vera* aberratione libera. Argumentum hujus tabulae anomalia ſolis *vera*, vel, quod in praeſenti caſu ſubſtituere licet, *media* eſt, argumentum

hoc

hoc ex tabulis noſtris ſolaribus (1804) uſurpari poterit, rejectis ſilicet duobus poſtremis numeris decimalibus. Eſt enim ibidem Arg. I anomalia ſolis media circulo 360 graduum in 10000 partes diviſo, ſed hic pro compendioſiſſima tabella noſtra in 100 partes aſſumto.

Correctio Aberrationis pro loco Solis ex terreſtris orbitae excentricitate orta.

Arg. I. Anomal. ⊙ media		Correctio Aberrationis	Arg. I. Anomal. ⊙ media	
0	100	+ 0,"34 —	50	50
5	95	0, 32	45	55
10	90	0, 28	40	60
15	85	0, 20	35	65
20	80	0, 11	30	70
25	75	+ 0, 01 —	25	75

Non ſolum terrae motus annuus in orbita, et ejusdem inaequalitas, conjuncta cum luminis velocitate, id quod ſupra diximus, lucis aberrationem annuam parit; ſed eadem de cauſa motus diurnus telluris, ſeu rotatio circa proprium axem, neceſſario ſimilem huic producere debet lucis effectum. Telluris gyrus annuus in ecliptica ſit, rotatio diurna in aequatore, ad hanc igitur nova haec lucis aberrationis inaequalitas referenda eſt. Cl. *EVLERVS* et Cl. *CAMERARIVS* materiem hanc fuſius perſcrutati ſunt in *Commentariis ſcientiarum Academiae Petropolitanae*, Vol. IX, 1739 pag. 169, in *Ephemerid. aſtron. Berolin. ad annum 1789*, pag. 139, et in *Supplemento* harum Ephemeridum Vol. I, pag. 198.

Ex analogia *aberrationis* luminis *annuae* perfacile ejusdem effectus in *aberrationem diurnam* colligi poteſt; eſt enim aberratio haec diurna in aſcenſionem rectam:

$$\frac{-\,0,''304 \cos \text{altit. pol.} \times \cos \text{ang. hor.} *}{\cos \text{decl.} *}$$

et in declinationem:

$$-\,0,''304 \cos \text{altit. pol.} \times \sin \text{decl.} * \times \sin \text{ang. horar.} * .$$

Pro obſervationibus in meridiano inſtitutis, angulus horarius fit $= 0$, adeoque aberratio diurna in declinationem in hoc caſu ſemper nulla eſt, in aſcenſionem rectam vero:

$$-\,0,''304 \cos \text{altit. pol.} \times \sec \text{decl.} * .$$

Supputata eſt per hanc formulam tabula ſubſequens, in qua, ne quidquam praetermiſiſſe videamur, minutiſſimum hunc luminis effectum in promtu habes.

Stellarum culminantium

Aberratio diurna in aſcenſionem rectam.

Arg. in fronte: altitudo poli obſervatoris.

Arg. in latere: declinatio fixae.

Decl.	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
°	″	″	″	″	″	″	″	″	″	″
0	0, 30	0, 30	0, 29	0, 26	0, 23	0, 20	0, 15	0, 10	0, 05	0, 00
10	0, 31	0, 30	0, 29	0, 27	0, 24	0, 20	0, 15	0, 11	0, 05	0, 00
20	0, 32	0, 32	0, 30	0, 28	0, 25	0, 21	0, 16	0, 11	0, 06	0, 00
30	0, 35	0, 35	0, 33	0, 30	0, 27	0, 23	0, 18	0, 12	0, 06	0, 00
35	0, 37	0, 37	0, 35	0, 32	0, 28	0, 24	0, 19	0, 13	0, 06	0, 00
40	0, 40	0, 39	0, 37	0, 34	0, 30	0, 26	0, 20	0, 14	0, 07	0, 00
45	0, 43	0, 42	0, 40	0, 37	0, 33	0, 28	0, 22	0, 15	0, 07	0, 00
50	0, 47	0, 47	0, 44	0, 41	0, 36	0, 30	0, 24	0, 16	0, 08	0, 00
55	0, 53	0, 52	0, 50	0, 46	0, 41	0, 34	0, 27	0, 18	0, 09	0, 00
60	0, 60	0, 60	0, 57	0, 53	0, 47	0, 39	0, 30	0, 21	0, 11	0, 00
63	0, 67	0, 66	0, 63	0, 58	0, 51	0, 43	0, 34	0, 23	0, 12	0, 00
66	0, 75	0, 74	0, 70	0, 65	0, 57	0, 48	0, 37	0, 26	0, 13	0, 00
69	0, 85	0, 84	0, 80	0, 74	0, 65	0, 69	0, 42	0, 29	0, 15	0, 00
72	0, 98	0, 97	0, 92	0, 85	0, 75	0, 63	0, 49	0, 34	0, 17	0, 00
75	1, 18	1, 16	1, 10	1, 02	0, 90	0, 76	0, 59	0, 40	0, 20	0, 00
78	1, 46	1, 44	1, 37	1, 27	1, 12	0, 94	0, 73	0, 50	0, 25	0, 00
81	1, 94	1, 91	1, 83	1, 68	1, 49	1, 25	0, 97	0, 67	0, 34	0, 00
84	2, 91	2, 86	2, 73	2, 52	2, 23	1, 87	1, 45	1, 00	0, 51	0, 00
87	5, 81	5, 72	5, 46	5, 03	4, 45	3, 73	2, 90	1, 99	1, 01	0, 00
88	8, 71	8, 58	8, 19	7, 54	6, 67	5, 60	4, 36	2, 98	1, 52	0, 00
Pol	9, 96	9, 80	9, 35	8, 62	7, 63	6, 40	4, 98	3, 41	1, 73	0, 00
89	17, 42	17, 15	16, 37	15, 09	13, 34	11, 20	8, 71	5, 96	3, 03	0, 00

Cum tabularum noſtrarum ſpecialium aberrationum et nutationum uſus, illis, qui in calculo aſtronomico vel mediocri uſu pollent, obſcurus eſſe non poſſit, eis explicandis non amplius immorabor. Tantum moneo, tabulas has ſpeciales aberrationis ad normam maximae aberrationis 20", et non ad illam 20,"255 conſtructas fuiſſe; augendae igitur ſunt $\frac{1}{79}$ partium ſuarum, ſi easdem ad quantitatem hanc poſtremam exaequare cupis.

Sit e. g. effectus aberrationis luminis in aſcenſionem rectam, et in declinationem pro fixa α Tauri die 5 Januarii 1800, et longitudine ſolis 9^s 15° data, poſita aberratione maxima 20,"255, ex tabula noſtra ſpeciali hujus fixae pag. 59 hujus operis explorandus; erit:

Aberrat. α Tauri in AR. pro arg. 9^s 10°	= + 17,"47	in decl. = + 1,"69
Pars proportionalis pro 5°	— 1, 120	— 0, 305
Summa	+ 16, 350	+ 1, 385
$\frac{1}{79}$ hujus ſummae	+ 0, 207	+ 0, 017
Aberrat. α Tauri pro argumento 9^s 15° in AR. poſ. aberr. max. 20,"255 . . .	+ 16,"557	in decl. = + 1,"402
Ex tabulis ſupra pag. 88 ſq. relatis haec aberratio ſec. Probl. I et II eſt	+ 16, 600	+ 1, 373
Ex tab. pag. 501 et 502 ſec. Probl. V et VI	+ 16, 591	+ 1, 383

Commoda et opportuna res eſt admodum, ſine calculi opera, aberrationis et nutationis effectum ex tabulis ſpecialibus depromere; ſed tabularum harum numero quantumvis aucto, fieri tamen non poteſt, ut omnium fixarum aberrationes et nutationes ſpeciales in tabulis comprehendantur, quoniam illarum numerus in multorum voluminum molem increſceret. Poteſt attamen tabularum harum, pro quibusdam fixis conſtructarum, uſus et ad alias extendi fixas, ſi nimirum loco ſtellae alicujus propoſitae, quae in tabulis ſpecialibus non deprehenditur, aliam quandam ipſi vicinam ſubſtituamus. Sed cum norimus, variata aſcenſione recta et declinatione fixae, ejusdem aberrationis effectus quoque variari, indagandum ſedulo eſt, quid variatio haec in variandis aberrationis quantitatibus efficiat, ut conſtet, quo jure tabula aberrationis unius fixae pro alia uſurpari poſſit. Quodſi enim error iſte adeo levis ſit, ut tuto contemni queat, novo et longiore calculo ſuperſedere omnino licebit. Si contra errorem ſatis gravem pertimeſcendum videamus, explorari poterit, quaenam correctiuncula aberrationis quantitati ex tabula mutuo acceptae pro fixa propoſita applicanda ſit. Habet haec disquiſitio et illud fructus, ut perinde etiam experiamur, qua cum fiducia et accurationis limite tabulae hae ſpeciales, pro certa temporis epocha ſup-

putatae, ad tempora remotiora adhiberi poſſint. Nam ob praeceſſionem annuam aequinoctiorum aſcenſiones rectae pariter ac declinationes ſiderum variantur quotannis, aberrationis effectus vero, vel ab aſcenſione recta, vel a declinatione, vel ab utraque ita pendet, ut vel hac, vel illa, vel utraque mutata ſimul et haec variari debeat.

Variationem hanc aberrationis luminis et axis terreſtris nutationis, e variata ſiderum aſcenſione recta, vel declinatione oriundam, commentatus eſt Cl. *CAMERARIVS* in *Actis ſcientiarum academiae* olim *electoralis Moguntinae*, quae *Erfurti* erat, ad annum 1797, pag. 101. Quae variatio quanta ſit, patebit differentiando formulam generalem, aberrationis effectum in aſcenſionem rectam exprimentem, et quae eſt: (pag. 83)

$$\frac{-19,''41734\cos(AR.*-\odot)-0,''837627\cos(AR*+\odot)}{\cos decl.*}$$

quo facto obtinemus:

$$d.\,aberr.=\frac{[19,''4\,734\sin(AR*-\odot)-0,''837627\sin(AR*+\odot)]\,d.\,AR.}{\cos.\ decl.*}-$$

$$-\frac{[19,''41734\cos(AR*-\odot)-0,''837627\cos(AR*+\odot)\sin decl.*]\,d.\,declin.*}{\cos\ decl.*^2}$$

Cum omnia membra hujus formulae, quae in 0,''837627 ducta ſunt, vix ad minuti ſecundi partem decimam aſſurgant, ſiquidem aſcenſio uno ſaltim gradu varietur, tuto omnino negligi poſſunt, exceptis fortaſſe, ſi quis ſummum rigorem adipiſci velit, ſtellis polo proximis; ſed et hic tuto omitti poſſunt, cum formulis his non ad inveniendos ope differentiarum aberrationis ſtellarum vicinarum effectus, ſed tantum ad dijudicandos eos caſus utamur, quibus differentiae iſtae, ex variata aſcenſione recta et declinatione ortae, ſatis ſenſibiles fiunt. Erit adeoque:

$$d.\ \text{aberr.}=[19,''41734\sin(AR*-\odot)]\,d.\,AR.\sec decl.*$$
$$[-19,''41734\cos(AR*-\odot)\tang.\,decl.*]\,d.\,decl.\sec.\,decl.*.$$

Unde Cl. *CAMERARIVS* ſequentes duas adeptus eſt tabulas:

TABVLA I.

Pro variatione aberrationis aſcenſionis rectae ob variatam uno gradu aſcenſionem rectam.

Argumentum in fronte: declinatio *
Argumentum a latere: Æ * — ⊙

+	—	0°	10°	20°	30°	40°	50°	60°	70°	80°	+	—
s ° s		"	"	"	"	"	"	"	"	"	s ° s	
0 0 6		0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	6 0 0	
10		0,059	0,060	0,063	0,068	0,077	0,092	0,118	0,172	0,339	20	
20		0,116	0,118	0,124	0,134	0,151	0,180	0,232	0,339	0,668	10	
1 0 7		0,169	0,172	0,180	0,196	0,221	0,264	0,339	0,495	0,976	5 0 11	
10		0,218	0,221	0,232	0,252	0,284	0,339	0,436	0,637	1,254	20	
20		0,260	0,264	0,276	0,300	0,339	0,404	0,519	0,759	1,495	10	
2 0 8		0,294	0,298	0,312	0,339	0,383	0,457	0,587	0,858	1,690	4 0 10	
10		0,318	0,323	0,339	0,368	0,416	0,495	0,636	0,931	1,833	20	
20		0,334	0,339	0,355	0,385	0,436	0,519	0,668	0,976	1,922	10	
3 0 9		0,339	0,344	0,361	0,391	0,442	0,527	0,678	0,991	1,952	3 0 9	

TABVLA II.

Pro variatione aberrationis aſcenſionis rectae ob variatam uno gradu declinationem.

Argumentum in fronte: declinatio *
Argumentum a latere: Æ * — ⊙.

—	+	0°	10°	20°	30°	40°	50°	60°	70°	80°	+	—
s ° s		"	"	"	"	"	"	"	"	"	s ° s	
0 0 0		0,000	0,061	0,131	0,226	0,371	0,629	1,174	2,723	11,069	6 0 0	
10		0,000	0,060	0,129	0,222	0,366	0,619	1,156	2,681	10,901	20	
20		0,000	0,057	0,123	0,212	0,349	0,591	1,103	2,558	10,402	10	
1 0 7		0,000	0,053	0,114	0,196	0,322	0,544	1 017	2,363	9,586	5 0 11	
10		0,000	0,047	0,101	0,173	0,284	0,481	0,899	2,086	8,480	20	
20		0,000	0,039	0,084	0,145	0,239	0,404	0,755	1,750	7,115	10	
2 0 8		0,000	0,030	0,066	0,113	0,186	0,314	0,587	1,361	5,535	4 0 10	
10		0,000	0,021	0,045	0,077	0,127	0,215	0,402	0,931	3,786	20	
20		0,000	0,011	0,023	0,039	0,065	0,109	0,204	0,473	1,922	10	
3 0 9		0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	3 0 9	

Formularum harum ac tabularum explicationem Cl. *CAMERARIVS* verbis ita exequitur.

1) In ſtellis, quarum declinatio eſt de 0° usque ad 45°, aſcenſionem rectam paulisper variatam plus variationis in aberrationem aſcenſionis rectae inferre, quam declinationem tantundem variatam: in ſtellis contra polo propioribus longe majorem vim eſſe variatae declinationis ad variandam aberrationem aſcenſionis rectae.

2) Summam, quam aſcenſio recta, uno gradu variata, gignere poſſit, variationem in aberratione aſcenſionis rectae eſſe in ſtellis zodiacalibus 0,"442, ſummam variationem in eadem aberratione e declinatione, uno gradu variata ortam, eſſe 0,"371. Cum vero nunquam eodem tempore ſumma variatio ab aſcenſione recta atque a declinatione oriunda locum habere ſimul poſſit, ſummam variationem, quae ab aſcenſione recta ſimul ac declinatione uno gradu variatis oriri poſſit, eſſe 0,"56 in ſtellis zodiacalibus. In ſtellis vero polis propioribus videmus majores longe fieri variationes aberrationis aſcenſionis rectae, et v. c. in ſtellis, quarum declinatio eſt 80°, aſcenſionem rectam uno gradu variatam 1,"952, declinationem vero uno gradu variatam adeo 11,"069 variationis inferre poſſe in aberrationem aſcenſionis rectae. Conſiderandum tamen eſt etiam illud, ipſam aſcenſionem rectam in ſtellis polo propioribus admodum obſervatu difficilem eſſe, adeoque in his ſtellis variationem aberrationis in aſcenſionem rectam, ſi vel ad aliquot minuta ſecunda aſcendat, haud adeo magni momenti rem eſſe.

3) Tabulas aberrationum aſcenſionis rectae in omnibus ſtellis zodiacalibus poſſe circiter 60 annos adhiberi, antequam variatio aſcenſionis rectae et declinationis errorem dimidii minuti ſecundi efficiat, quod nempe 60 annis aſcenſio recta paulo plus uno gradu, declinatio autem 10′ variari poteſt in ſtellis borealibus, quarum aſcenſio recta $= 2^s$, vel in ſtellis auſtralibus, quarum aſcenſio recta $= 8^s$, in ſtellis aequatori vicinis tempus, quo pari accuratione adhiberi queunt, eſſe fere 120 annorum, quibus aſcenſio recta paulo plus uno gradu cum dimidio, declinatio autem 40′ variatur in ſtellis, quarum aſcenſio recta $= 0^s$. Tabulae aberrationum aſcenſionis rectae in ſtellis polo propioribus ſi per triginta annos adhibeantur, maximi errores, qui ex variata declinatione oriri poterunt, erunt pro declinatione 80°, 1,"849; 1,"792; 1,"577; 1,"395; 1,"170; 0,"944; 0,"652; 0,"316; errores autem, qui ex variata aſcenſione recta oriri poterunt pro declinatione 80° maximi erunt: 2,"573; 2,"496; 2,"383 etc. qui cum erroribus maximis, a declinatione ortis, nunquam conſpirare poſſunt,

ut adeo ſumma errorum ad 3″ circiter aſcendat. Atque ejusmodi errores in ſtellis polo adeo vicinis omnino tolerandi videntur; adeoque tabulae aberrationum aſcenſionis rectae in ſtellis polo vicinis triginta circiter annos, niſi quis ſummum rigorem quaerat, adhiberi poterunt. Pro ſtella polari conſultum fuerit, quovis decennio novam tabulam conſtruere, maxime ob errores, ex variata interim declinatione metuendos, qui tum admodum magni evadunt.

4) Poſſe, ſi quis errorem unius minuti ſecundi in aberratione aſcenſionis rectae contemni poſſe credat, pro ſtella aliqua eligi alteram ipſi vicinam intra limites, parva hac tabula notatos, quae ita intelligenda eſt, ut v. c. in declinatione 10°, vel aſcenſionem rectam 3°, ac ſimul declinationem 1°; vel aſcenſionem rectam 2° et declinationem 7°; vel denique aſcenſionem rectam 1°, ac ſimul declinationem 9° variari poſſe videamus, antequam inde in aberrationem aſcenſionis rectae error 1″ irrepat.

Declinat.	0°	10°	20°	30	40°	50°	60°	70°	80°
Different. aſcenſ. rectae	3°	α) 3° β) 2 γ) 1	α) 2° β) 1 γ) 0	α) 2° β) 1 γ) 0	α) 2° β) 1 γ) 0	α) 2° β) 1 γ) 0	α) 1° 30′ β) 1 γ) 0	α) 1° β) 0 30′ γ) 0	α) 0° 20′ β) 0
Different. declinationis	3°—4°	α) 1° β) 7 γ) 9	α) 6° β) 7 γ) 8	α) 3° β) 4 γ) 4	α) 1° β) 2 30′ γ) 3	α) 0° β) 1 20′ γ) 1 30	α) 0° β) 0 30′ γ) 1	α) 0° β) 0 15′ γ) 0 20	α) 0° β) 0 10′

Si quis vero ab errore etiam dimidii minuti ſecundi cavere velit, quoque limites tanto anguſtiores ſibi conſtituet, eademque ratione, ſi quis in ſtellis praecipue polo vicinis majores etiam errores admitti poſſe putet, ex ſimili tabula quaerere poterit, intra quos fere limites ſtellarum inter ſe diſtantia, vel quoad aſcenſionem rectam, vel quoad declinationem contineri debeat.

5) Tabulas allatas, quamvis, ut diximus, eo ſine elaboratae non ſint, poſſe tamen etiam adhiberi ad inveniendas reapſe differentias aberrationum aſcenſionis rectae in ſtellis ſibi invicem vicinis, quod longe commodius adhuc fieri poſſet, ſi tabulae non denos tantum, ſed ſingulos argumentorum gradus continerent. Quod, ut exemplo aliquo confirmemus, conſideremus v. g. f Tauri, cujus aſcenſio recta anno 1800 eſt 49° 57′ 43″, declinatio vero 12° 14′ 32″, atque cum ea s Tauri comparemus, cujus aſcenſio recta 1800, 49° 52′ 27″, declinatio 10° 38′ 27″, ut itaque fiat $d.\,A\!R = -5'\,16'' = -0,''088$, et $d.$ declin. $= -1°\,36'\,5'' = -1,''601$. Quo facto, poſita numero rotundo aſcenſione recta f Tauri $= 50°$ et loco ſolis $= 0°$, ex

tabula I, ſi declinatio = 10°, pro 1° variatione invenies + 0,"264, ſi vero declinatio = 20°, ſumendum erit + 0,"276, adeoque cum declinatio ſit 12° 14,'5, prodit + 0,"267 pro variatione unius gradus aſcenſionis rectae. At cum ſit *d.* Æ = — 0,"088, ſequitur — 0,"023 pro variatione aſcenſionis rectae. Eodem modo ex tabula II, ſi declinatio = 10°, pro 1° variatione comperies — 0,"039, ſi vero declinatio = 20°, pro 1° variatione ſumendum erit — 0,"084, adeoque, cum declinatio ſit 12° 14,'5, quantitas reſpondens in tabula II eſt — 0,"049, pro variatione unius gradus declinationis. At cum ſit *d.* Decl. = 1,"601, erit + 0,"078 pro variatione declinationis. Pro utraque itaque variatione ſimul ſumta habetur + 0,"055. Atqui ex tabulis noſtris ſpecialibus pag. 27, ſi locus ſolis = 0°, aberratio aſcenſionis rectae eſt — 12,"06 pro *f* Tauri; erit itaque eodem loco pro *s* Tauri — 12,"01; tabulae noſtrae pag. 26 habent — 12,"03, quae levis in partibus tantum centeſimis minuti ſecundi differentia pro *nulla* haberi poteſt. Pari ratione in eadem ſtella, ſi locus ſolis = 2^s = 60°, adeo Æ * — ⊙ = 10°, ex tabula I, ſi declinatio = 10°, pro 1° variatione ſumendum erit + 0,"060, ſi vero declinatio = 20°, + 0,"063, unde, cum declinatio ſit = 12° 14,'5, pro 1° variatione erit + 0,"061, adeoque, cum ſit *d.* Æ = — 0,"088, pro variatione aſcenſionis rectae proveniet — 0,"005. Eodem modo ex tabula II, ſi declinatio = 10°, pro 1° variatione prodit — 0,"060 ſi vera declinatio = 20°, — 0,"129, unde, cum declinatio ſit 12° 14,'5, pro 1° variatione ſumi debet — 0,"075. At cum *d.* decl. = — 1,"601, accipiendum erit + 0,"120. Pro utraque itaque variatione ſimul ſumta invenies + 0,"115. Atqui ex tabulis noſtris, ſi locus ſolis = 2^s, aberratio aſcenſionis rectae eſt — 19,"61 pro *f* Tauri; itaque pro *s* Tauri erit — 19,"49; tabulae habent — 19,"50.

Reſtat nunc etiam, ut effectum in aberrationem declinationis inquiramus, variatis ſingularum fixarum declinationibus et aſcenſionibus rectis. Differentiando itaque formulam aberrationis in declinationem, et neglectis iis membris, quae in 0,"837627 vel 4,"03293 ducta ſunt, et quorum illud poſita *d.* Decl. *, vel *d.* Æ * = 1°, nunquam 0,"02, hoc nunquam 0,"07 efficient, erit:

d. aberr. in decl. = 19,"41734 ſin decl. * coſ (Æ * — ⊙) *d.* Æ
19,"41734 coſ decl. * ſin (Æ * — ⊙) *d.* decl.

Hinc poſita *d.* decl. * pariter ac *d.* Æ * = 1° = 3600" ſequentes emergunt tabulae:

TABVLA I.

Pro variatione aberrationis declinationis ob variatam uno gradu aſcenſionem rectam.

Argumentum in fronte: declinatio ✱.
Argumentum a latere: Æ.✱ — ☉.

+		—	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	—		+
s	°	s	"	"	"	"	"	"	"	"	"	"	s	°	s
0	0	6	0,000	0,059	0,116	0,170	0,218	0,260	0,293	0,318	0,334	0,339	6	0	0
	10		0,000	0,058	0,114	0,167	0,214	0,256	0,289	0,314	0,329	0,334		20	
	20		0,000	0,055	0,109	0,159	0,205	0,244	0,276	0,299	0,314	0,318		10	
1	0	7	0,000	0,051	0,100	0,147	0,189	0,225	0 254	0,276	0,289	0,293	5	0	11
	10		0,000	0,045	0,089	0,130	0,167	0,199	0,225	0,244	0,256	0,260		20	
	20		0,000	0,038	0,075	0,109	0,140	0,167	0,189	0,205	0,214	0,218		10	
2	0	8	0,000	0,029	0,058	0,085	0,109	0,130	0,147	0,159	0,167	0,170	4	0	10
	10		0,000	0,020	0,040	0,058	0,075	0,089	0,100	0,109	0,114	0,1 16		20	
	20		0,000	0,010	0,020	0,029	0,038	0,045	0,051	0,055	0,059	0,059		10	
3	0	9	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	3	0	9

TABVLA II.

Pro variatione aberrationis declinationis ob variatam uno gradu declinationem.

Argumentum in fronte: declinatio ✱.
Argumentum a latere: Æ. ✱ — ☉.

+		—	0°	10°	20°	30°	40°	50°	60°	70°	80°	+		—
s	°	s	"	"	"	"	"	"	"	"	"	s	°	s
0	0	6	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	6	0	0
	10		0,059	0,058	0,055	0,051	0,045	0,038	0,029	0,020	0,010		20	
	20		0,116	0,114	0,109	0,100	0,089	0,075	0,058	0,040	0,020		10	
1	0	7	0,170	0,167	0,159	0,147	0,130	0,109	0,085	0,058	0,029	5	0	11
	10		0,218	0,214	0,205	0,189	0,167	0,140	0,109	0,075	0,038		20	
	20		0,260	0,256	0,244	0,225	0,199	0,167	0,130	0,089	0,045		10	
2	0	8	0,293	0,289	0,276	0,254	0,225	0,189	0,147	0,100	0,051	4	0	10
	10		0,318	0,314	0,299	0,276	0,244	0,205	0,159	0,109	0,055		20	
	20		0,334	0,329	0,314	0,289	0,256	0,214	0,167	0,114	0,058		10	
3	0	9	0,339	0,334	0,318	0,293	0,260	0,218	0,170	0,116	0,059	3	0	9

Hinc apparet:

1) Summam, quae ex aſcenſione recta ſimul ac declinatione uno gradu variatis oriri poſſit, variationem declinationis, eſſe circiter 0,"35, eamque fere aequaliter locum habere poſſe, quaecunque ſit ſtellae declinatio.

2) Sexaginta annis, quibus tabularum aberrationis in aſcenſionem rectam uſum permiſſum eſſe diximus in ſtellis zodiacalibus, in aberratione declinationis in ſtellis adeo polo proximis vix 0,"34 variationis ob variatam interim aſcenſionem rectam oriri, cui deinde admodum parva aliqua variatio ob variatam interim declinationem accedat, ita ut tabulis aberrationis in declinationem pro ſtellis quibuscunque circiter 100 annos uti liceat, antequam inde error 0,"5 oriatur; pro ſtellis autem zodiacalibus uſum earum adeo ultra duo ſecula ſine periculo erroris 0,"5 extendi poſſe.

3) Limites, intra quos ſtellarum vicinarum aberratio in declinationem ſine periculo erroris 1" promiscue ſumi poſſit, hac tabula contineri:

Declinatio	0°	10°	20°	30°	40°	50°	60°	70°	80°
Differentia aſcenſionis rectae	α)8° β)0	α)8° β)3	α)7° β)2	α)5° β)3	α)3° β)2	α)3° 30' β)2	α)3° β)2	α)3° β)1° 30'	α)3° β)2
Differentia declinationis	α)2° β)3	α)2° β)3	α)1° 30' β)3	α)2° β)3	α)2° β)3° 30'	α)2° β)3	α)3° β)5	α)2° β)7	α)0° β)8

De nutatione axis terreſtris.

Axem terrae periodicae cuidam inclinationi, quam *axis terreſtris nutationem* vocant, eſſe obnoxiam, jam Cl. *NEWTONVS* ex theoria ſua univerſali gravitationis aſſecutus eſt. *) Demonſtravit enim ſummus hic geometra, cum terra altior ſit ad aequatorem, quam ad polos, ejus puncta aequinoctialia regredi, et oſcillatorio axis telluris motu bis in ſingulis revolutionibus nutare, et bis redire ad poſitionem priorem. Motum hunc perexiguum eſſe putabat, et vix aut ne vix quidem ſenſibilem, ideoque ejus quantitatem definire operae non eſſe pretium duxit.

Sperabat Cl. *FLAMSTEEDIVS* **) anno 1690, ſe quantitatem hanc nutationis obſervationum ope determinare poſſe; ſed comparando inter ſe obſervationes ſuas menſium duodecim, tandem ariolatus eſt, ſi talis detur nutationis effectus, adeo eſſe minutum, ut organis ſuis plane non ſit perceptibilis, adeoque majoribus inſtrumentis, magisque quam ſua ſint, firmatis aſſequendum, quod etiam tum fieri poſſe deſperabat.

Patet ex Cl. *ROEMERI* autographis, a Cl. *PET. HORREBOVIO* in operum mathematico-phyſicorum tomo tertio ***) prolatis, ſagaciſſimum hunc, deque lucis aberrationis invento optime meritum aſtronomum, de axis terreſtris nutatione jam ab anno 1693 indicia certa, atque veſtigia habuiſſe. Cum enim quasdam in obſervationibus ſuis per duos annos expertus eſſet variationes: eas nec refractionibus, nec parallaxibus tribui poſſe, ſed ad vacillationem aliquam poli terreſtris referendas eſſe apertis pronuntiaverat verbis, cujus ſe veriſimilem explicationem et obſervationibus munitam theoriam dare poſſe ſperabat.

Reſervatum fuit ſummo aſtronomo Cl. *BRADLEJO*, eodem auxilio, eodemque inſtrumento, quo in lucis aberrationis quantitatem inquiſiverat, nutationis quantitatem definire. Nam cum inceptas aberrationum obſervationes perpetim perſequeretur; lucis aberrationis phaenomena quovis anno eodem ordine redire et easdem ſemper ſervare

*) Philoſoph. natur. princip. math. Lib. III. Prop. XXI. Theor. XVII, et de mundi ſyſtemate § 37, pag. 203. Edit. Lond. Horsley, 1782.

**) Hiſt. coel. britann. Prolegom. Vol. III, pag. 113.

***) Baſis aſtron. Cap. X, § 157, 158, pag. 65. Havniae, 1741.

leges deprehendit, variatis tamen quotannis aliquantiſper differentiis, aliis quam ſupra dictis obſequendo legibus. Sed perſequendo obſervationes pertinaciter, incidit tandem anno 1747 in veram hujus deviationis cauſam, quam ex quindecim annorum obſervationibus enodaverat, eamque in *Transactionibus philoſophicis ſocietatis reg. Londinenſ.* ad annum 1748, No. 485, primus dilucide explanavit.

Finxit nempe ad effectum hujus nutationis explicandum, circa aequatoris polum circellum 18° diametro deſcriptum, per cujus peripheriam axis terrae per intervallum unius nodorum lunae revolutionis vagari videtur, ita ut inclinatio axis terreſtris continuo mutetur; ex qua mutatione fixarum latitudines non variantur, quoniam polus eclipticae non mutatur, ſed axis terrae et eclipticae diſtantia, hoc eſt, obliquitas eclipticae, periodicam ſubit mutationem; hinc ex mutata aequatoris cum ecliptica interſectione eundem effectum periodicum in ſiderum longitudinibus producit.

Cl. D'*ALEMBERT*, qui problema praeceſſionis aequinoctiorum et nutationis axis terreſtris primus ad umbilicum reſolvit, primus etiam ex reconditioribus attractionis legibus demonſtravit, *) axem terrae non circellum, ut *BRADLEJVS* ſtatuerat, imo vero ellipſin deſcribere, cujus axis major ad axem minorem ſe habet, ut coſinus obliquitatis eclipticae ad coſinum dupli hujus obliquitatis, hoc eſt, ſecundum obſervationes Cl. *BRADLEJI* ut 9″ ad 6,″7. Quam *BRADLEJI* rationem Cl. *MASKELYNE* repetitis ſupputationibus obſervationum fixarum γ Draconis et η Urſae majoris accuratius invenit ut 9,″55 ad 7,″10 **); ſed cognita nunc maſſa lunae majori cum certitudine, quantitas abſoluta nutationis exploratius ex theoria innoteſcet; unde Cl. DE LA *PLACE* ***) rationem hanc deduxit 10,″055664 : 7,″48562, ad cujus normam tabulae ad calcem operis pag. 503 conſtructae ſunt. Sed cum acutiſſimus hic geometra maſſam lunae juſto majorem aſſumſiſſet, nobis vero, ut in *tabulis* noſtris *motuum ſolis noviſſimis et iterum correctis* pag. 10 jam indicavimus, maſſa haec correcta ſit 0,8555; ſequitur inde, rationem noſtram axium nutationis ellipſeos fore ut 9,″6480 ad 7,″1822. Hinc quantitas nu-

*) Recherches ſur la préceſſion des équinoxes, et ſur la nutation de l'axe de la terre dans le ſyſtême Newtonien, par M. *D'Alembert*. Paris, 1749, § 62, pag. 70.

**) Tables for computing the apparent places of the fixt ſtars etc. By *Nevil Maskelyne*. London 1774, pag. VIII.

***) Mécanique céleſte, Tom. II, pag. 351.

tationis axis telluris, ſive variatio, quam motus plani aequatoris in obliquitate eclipticae producit, eſt: 9,"6480 coſ. long. nodi aſcend. lunae; atque imminutio longitudinis omnium ſiderum:

7,"1822 ſin ☊☾ coſec. obl. eclipt. = 18,"03584 ſin. ☊☾.

Ad mentem hujus formulae conſtructa eſt tabula noſtra I, pag. 121. Variationes hae neceſſario et omnes aſcenſiones rectas et declinationes ſiderum inficiunt. Cl. *D'ALEMBERT*, et poſt hunc alii, qui problema hoc pertractarunt, tradiderunt regulas, quibus nutationis effectus tum in aſcenſionem rectam, tum in declinationem computari poſſunt. Has vero regulas ad ſimpliciſſimam et aptiſſimam, ut jam diximus, reduxit formam, et in compendioſiſſimas coegit tabulas Cl. *LAMBERT*,*) quibus calculus hic facillimo abſolvi poteſt negotio. Eſt nimirum ad numeros noſtros exaequatus effectus nutationis in aſcenſionem rectam.

1) — 16,"54414 ſin long. ☊☾ — (9,"6480 coſ. Æ* coſ. ☊☾ +
+ 7,"1822 ſin Æ* ſin ☊☾) tang. decl. *

vel

2) — 16,"54414 ſin long. ☊☾ + [8,"41507 ſin (Æ* — ☊☾ — 3ˢ) +
+ 1,"23293 ſin (Æ* + ☊☾ — 3ˢ] tang. decl. *

Pars prima formulae — 16,"54414 ſin ☊☾ omnibus fixis conſtanter communis in tabula IV, pars ſecunda variabilis in tabula II, pars tertia vero in tabula III exhibetur.

Jam cum quantitates hae duae poſtremae per tangentem declinationis multiplicandae ſint: eodem artificio, quo ſaepenumero uſi ſumus, multiplicatio haec vitari poteſt, ponendo nempe $\frac{\text{tang. decl.}}{10}$ = coſ. α, ideoque tang. declin. = 10 coſ. α (pag. 29). Quo poſito, formula noſtra pro nutatione in aſcenſionem rectam abit in hanc:

— 165,"4414 ſin long. ☊☾ — 84,"1507 coſ (Æ* — ☊☾) coſ α —
— 12,"3293 coſ (Æ* + ☊☾) coſ. α.

Evolvendo producta coſinuum, et ſubſtituendo in membro primo ☊☾ + 3ˢ loco ☊☾, erit nutatio in aſcenſionem rectam:

+ 16,"54414 coſ (☊☾ + 3ˢ)
— 42,"0754 coſ (Æ* ☊☾ — α) — 42,"0754 coſ (Æ* — ☊☾ + α)
— 6,"1647 coſ (Æ* + ☊☾ + α) — 6,"1647 coſ (Æ* + ☊☾ — α)

*) Berliner aſtronom. Jahrbuch, 1776, pag. 108.

Supputatae ſunt per has formulas tabulae noſtrae V, VI et VII, et ad vitandum ſignum algebraicum negativum, quantitates hae cunctae redditae ſunt poſitivae, addendo nimirum quantitatem conſtantem 200". Cum vero tabularum harum uſus pro quovis nutationis calculo quinquies redeat, a ſumma quantitatum excerptarum, $5 \times 200" = 1000"$ detrahenda ſunt, vel complementum ad 1000" ſumendum, ſi ſubtractio locum habere non poteſt; in quo caſu quantitas nutationis negativa evadit.

Pro declinationibus majoribus tang. decl. = 10 cof α locum habere non poteſt; ſumendum ergo eſt: tang. decl. = 100 cof. β, in quo caſu formula noſtra erit:

$+ 16,"54414 \cos(\Omega\mathbb{C} + 3^s)$
$- 420,"754 \cos(\text{Æ}* - \Omega\mathbb{C} - \beta) - 420,"754 \cos(\text{Æ}* - \Omega\mathbb{C} + \beta)$
$- 61,"647 \cos(\text{Æ}* + \Omega\mathbb{C} + \beta) - 61,"647 \cos(\text{Æ}* + \Omega\mathbb{C} + \beta)$

Quantitates ergo e tabulis V et VI excerptae per 10 multiplicandae ſunt, et cum illis tabulis, ad reddendas quantitates poſitivas, adjecti ſint numeri conſtantes 2000", ſed tabulae VII tantummodo 200" acceſſerint, quia angulum β non involvit, ſumma omnium conſtantium in fine applicandorum erit $4 \times 2000" + 200" = 8200"$.

Pro declinatione fixae auſtrali tangens declinationis fit negativa, ideoque pars variabilis mutat ſignum, vel, quod eodem redit, argumentis addenda ſunt VI ſigna.

Nutationis in declinationem effectum ſequens exprimit formula:

$$+ 8,"41507 \sin(\text{Æ}* - \Omega\mathbb{C}) + 1,"23293 \sin(\text{Æ}* + \Omega\mathbb{C}).$$

Ex quo vel primo intuitu apparet, ambas formulas per easdem exhiberi poſſe tabulas II et III, quae pro parte variabili nutationis in aſcenſionem rectam ſupputatae fuere. Poſſunt etiam harum tabularum quantitates, tum poſitivae tum negativae, perpetuo in poſitivas verti, adjecto utrinque numero conſtante 10"; adeoque a ſumma algebraica quantitatum, ex tabulis ita confectis depromtarum, ſemper 20" auferenda; vel ſi hoc fieri nequit, eadem a 20" ſubtrahenda eſt. In hujus calculi commodum tabulae VIII et IX conſtructae ſunt.

Reſtat, ut de ſecunda quadam nutationis parte mentionem faciamus, quae ab actione ſolis in aequatorem terreſtrem pendet, et cujus effectus in longitudinem eſt = 1,"12198 ſin (2 long. ☉). Aequationis hujus ſtructura ſatis ſuperque demonſtrat, omnia ſidera, omninoque omnia corpora coeleſtia ſine diſcrimine per hanc nutationis quantitatem conſtanter eodem prorſus affici modo. In pleriſque itaque

obſervationibus et calculis tuto et ſine erroris periculo haec omitti poterit. Nam cum in determinandis, exempli gratia, planetarum locis, planetae perpetim cum fixis comparentur, aequatiuncula haec tum planetis, tum fixis applicanda eſt. Differentia ergo, quae inter fixae et planetae poſitionem intercedit, eadem ſemper manet, ſive aequatiunculam hanc adhibueris, ſive illam omiſeris. In hoc tantummodo caſu haec nutationis pars praetermittenda non erit, ſi motum apparentem fixae, dato temporis intervallo, noſſe oportet, quod tunc evenire poteſt, ſi verbi gratia, methodo Flamſteediana, aſcenſio recta fixae, bis anno, ex duabus cum ſole comparationibus determinanda foret. Cum omnis quantitas actionis ſolis in longitudinem (1,"12198) pars $\frac{1}{16.074}$ = 0,06221 actionis lunae in eandem longitudinem (18,"03584) ſit; ex ingenio ſupponi poterit, actionem hanc in aſcenſionem rectam et in declinationem, eandem ſervaturam eſſe rationem. Sed cum omnis ratiocinatio per analogiam facile paralogismum involvere, et in errorem inducere poſſit: praeſtat naturam hujus quaeſtionis penitus inſpicere.

Hanc materiem jamdudum ſolita ſua perſpicacitate et elegantia perſcrutatus eſt Cl. *EVLERVS* in *novis Commentariis Petropolitanis* ad annum 1768*). Applicando doctiſſimae analyſi ſummi hujus geometrae numeros noſtros ſupra traditos de lunae maſſa, et nutationis abſoluta quantitate, obtinemus pro variatione periodica obliquitatis eclipticae ex nutationis effectu orta:

$$+ 9,''6480 \text{ coſ. long. } \Omega☾ + 0,''6002 \text{ coſ. } (2 \text{ long. } \odot) + 0,''0362 \text{ coſ } (2 \text{ long. } ☾) + \\ + 0,''0193 \text{ coſ } (2 \text{ long. } ☾ + \Omega☾)$$

et eundem effectum in puncta aequinoctialia:

$$18,''03584 \text{ ſin } \Omega☾ - 1,''12198 \text{ ſin } (2 \text{ long. } \odot) - 0,''1007 \text{ ſin } (2 \text{ long. } ☾)$$

Partes, quae in formulis his a longitudine lunae pendent, adeo ſunt minutae, ut manifeſto negligi poſſint; omnis quaeſtio itaque eo redit, quasnam aſcenſio recta et declinatio fixae ſubiturae ſint mutationes, ſi obliquitas eclipticae quantitate + 0,"6002 coſ (2 long. ⊙) et longitudo fixae quantitate — 1,"12198 ſin (2 long. ⊙) immutantur?

Sit itaque aſcenſio recta fixae = Æ, declinatio = D, longitudo = L, latitudo = λ ſemper conſtans, obliquitas eclipticae = ε. Erit:

1) $d\,AR \text{ tang } AR + d\,D \text{ tang } D = d\,L. \text{ tang } L.$

2) $d\,D = d\,\varepsilon \text{ ſin } AR + d\,L. \text{ ſin } \varepsilon \text{ coſ } AR.$

Ponendo coſÆ tang L cotang. D = ſin ε + coſ ε ſin Æ cotang D habemus:

3) $d\,AR = [d\,L. \text{ ſin } \varepsilon \text{ ſin } AR - d\,\varepsilon \text{ coſ } AR] \text{ tang } D + d\,L \text{ coſ } \varepsilon.$

*) Inveſtigatio accuratior phaenomenorum, quae in motu terrae diurno a viribus coeleſtibus produci poſſunt. Tom. XIII, pag. 202.

Eſt vero $d\varepsilon = + 0,''6002 \cos (2 \text{ long.} \odot)$

et $dL = - 1,''12198 \sin (2 \text{ long.} \odot)$ ergo hinc:

$dD = 0,''6002 \cos (2 \text{ long.} \odot) \cos AR - 1,''12198 \sin (2 \text{ long.} \odot) \sin \varepsilon \cos AR.$

vel $dD = 0,''6002 \cos (2 \text{ long.} \odot) \cos AR - 0,''4468 \sin (2 \text{ long.} \odot) \cos AR$

et

$$dAR = [-1,''12198 \sin \varepsilon \sin (2 \text{long.} \odot) \sin AR - 0,''6002 \cos (2 \text{long.} \odot) \cos AR] \operatorname{tang} D - \\ - 1,''12198 \cos \varepsilon \sin (2 \text{ long.} \odot)$$

vel

$$dAR = [-0,''4468 \sin (2 \text{ long.} \odot) \sin AR + 0,''6002 \cos (2 \text{ long.} \odot)] \operatorname{tang} D - \\ - 1,''0292 \sin (2 \text{ long.} \odot)$$

Si formulas has cum illis pro actione lunae ſupra traditis comparaveris, vel primo intuitu illarum identitatem conſpicies, ſi duntaxat longitudinis nodi lunae loco poſueris (2 long. ☉). Coefficientes tunc reſpondentes ita ſe habebunt:

$$\frac{1,''0292}{16,''54414} = 0,''06221$$

$$\frac{0,''4468}{7,''18215} = 0,''06221$$

$$\frac{0,''6002}{9,''6480} = 0,''06221$$

ut ſupra pro longitudine invenimus.

Porro hae formulae indicant

1) pro differentia 30 graduum in aſcenſione recta, ſi declinatio $= 30°$, variationem vix $0,''1$ attingere;

2) partem hanc ſecundam nutationis, in longitudine, in aſcenſione recta et in declinatione, ex parte prima hujus nutationis expedite et nullo fere negotio derivari poſſe per ſequentem regulam:

Pro argumento ſume loco long. ☊ ☾ duplicatam longitudinem ſolis; ingredere cum hoc argumento tabulas, ſive generales, ſive ſpeciales, quantitates primae nutationis partis exhibentes; numerum reſpondentem multiplica per 0,0622, et habebis ſecundam nutationis partem, a ſolis actione provenientem, pro tabularum ſignis applicandam; pro longitudinibus vero nutationis partem ſecundam ſequens exhibet tabula.

Argumentum: longitudo ☉				Pars II nutat. in long.	Argumentum: longitudo ☉			
—	—	+	+		—	—	+	+
0ˢ	VIˢ 0°	IIIˢ	IXˢ	0,''000	IIIˢ	IXˢ 0°	VIˢ	XIIˢ
	5			0, 195		25		
	10			0, 384		20		
	15			0, 561		15		
	20			0, 721		10		
	25			0, 860		5		
I	VII 0	IV	X	0, 972	II	VIII 0	V	XI
	5			1, 054		25		
	10			1, 105		20		
I	VII 15	IV	X	1, 122	I	VII 15	IV	X

En jam tabulas has, illarumque uſum.

NVTATIONIS TABVLAE VNIVERSALES.

TABVLA I.

Pro nutatione in longitudinem.

PARS I.

Argumentum: longitudo nodi ascendentis lunae.

Grad.	0s 6s — +	Diff.	1s 7s — +	Diff.	2s 8s — +	Diff.	
0	0,"000	0,"315	9,"018	0,"271	15,"619	0,"155	30
1	0, 315	0, 314	9, 289	0, 269	15, 774	0, 151	29
2	0, 629	0, 315	9, 558	0, 265	15, 925	0, 145	28
3	0, 944	0, 314	10, 823	0, 262	16, 070	0, 140	27
4	1, 258	0, 314	10, 085	0, 259	16, 210	0, 136	26
5	1, 572	0, 313	10, 344	0, 257	16, 346	0, 130	25
6	1, 885	0, 313	10, 601	0, 253	16, 476	0, 126	24
7	2, 198	0, 312	10, 854	0, 250	16, 602	0, 120	23
8	2, 510	0, 311	11, 104	0, 246	16, 722	0, 116	22
9	2, 821	0, 311	11, 350	0, 243	16, 838	0, 110	21
10	3, 132	0, 309	11, 593	0, 239	16, 948	0, 105	20
11	3, 441	0, 309	11, 832	0, 236	17, 053	0, 100	19
12	3, 750	0, 307	12, 068	0, 232	17, 153	0, 095	18
13	4, 057	0, 306	12, 300	0, 228	17, 248	0, 089	17
14	4, 363	0, 305	12, 528	0, 225	17, 337	0, 084	16
15	4, 668	0, 303	12, 753	0, 221	17, 421	0, 079	15
16	4, 971	0, 302	12, 974	0, 217	17, 500	0, 074	14
17	5, 273	0, 300	13, 191	0, 212	17, 574	0, 068	13
18	5, 573	0, 299	13, 403	0, 208	17, 642	0, 062	12
19	5, 872	0, 297	13, 611	0, 205	17, 704	0, 058	11
20	6, 169	0, 295	13, 816	0, 200	17, 762	0, 052	10
21	6, 464	0, 292	14, 016	0, 196	17, 814	0, 046	9
22	6, 756	0, 291	14, 212	0, 192	17, 860	0, 041	8
23	7, 047	0, 289	14, 404	0, 187	17, 901	0, 036	7
24	7, 336	0, 286	14, 591	0, 183	17, 937	0, 030	6
25	7, 622	0, 284	14, 774	0, 178	17, 967	0, 025	5
26	7, 906	0, 282	14, 952	0, 174	17, 992	0, 019	4
27	8, 188	0, 279	15, 126	0, 169	18, 011	0, 014	3
28	8, 467	0, 277	15, 295	0, 165	18, 025	0, 008	2
29	8, 744	0, 274	15, 460	0, 159	18, 033	0, 001	1
30	9, 018		15, 619		18, 034		0
	+ —	Diff.	+ —	Diff.	+ —	Diff.	Grad.
	11s 5s		10s 4s		9s 3s		

Eſt vero $d\,s = + 0,''6002 \cos (2 \text{ long.} \odot)$

et $d\,L = - 1,''12198 \sin (2 \text{ long.} \odot)$ ergo hinc:

$d\,D = 0,''6002 \cos (2 \text{ long.} \odot) \cos AR - 1,''12198 \sin (2 \text{ long.} \odot) \sin s \cos AR$

vel $d\,D = 0,''6002 \cos (2 \text{ long.} \odot) \cos AR - 0,''4468 \sin (2 \text{ long.} \odot) \cos AR$

et

$$d\,AR = [- 1,''12198 \sin s \sin (2 \text{long.} \odot) \sin AR - 0,''6002 \cos (2 \text{long.} \odot) \cos AR] \operatorname{tang} D - \\ - 1,''12198 \cos s \sin (2 \text{ long.} \odot)$$

vel

$$d\,AR = [- 0,''4468 \sin (2 \text{ long.} \odot) \sin AR + 0,''6002 \cos (2 \text{ long.} \odot)] \operatorname{tang} D - \\ - 1,''0292 \sin (2 \text{ long.} \odot)$$

Si formulas has cum illis pro actione lunae ſupra traditis comparaveris, vel primo intuitu illarum identitatem conſpicies, ſi duntaxat longitudinis nodi lunae loco poſueris (2 long. ☉). Coefficientes tunc reſpondentes ita ſe habebunt:

$$\frac{1,''0292}{16,''54414} = 0,''06221$$

$$\frac{0,''4468}{7,''18215} = 0,''06221$$

$$\frac{0,''6002}{9,''6480} = 0,''06221$$

ut ſupra pro longitudine invenimus.

Porro hae formulae indicant

1) pro differentia 30 graduum in aſcenſione recta, ſi declinatio $= 30°$, variationem vix $0,''1$ attingere;

2) partem hanc ſecundam nutationis, in longitudine, in aſcenſione recta et in declinatione, ex parte prima hujus nutationis expedite et nullo fere negotio derivari poſſe per ſequentem regulam:

Pro argumento ſume loco long. ☊ ☾ duplicatam longitudinem ſolis; ingredere cum hoc argumento tabulas, ſive generales, ſive ſpeciales, quantitates primae nutationis partis exhibentes; numerum reſpondentem multiplica per 0,0622, et habebis ſecundam nutationis partem, a ſolis actione provenientem, pro tabularum ſignis applicandam; pro longitudinibus vero nutationis partem ſecundam ſequens exhibet tabula.

Argumentum: longitudo ☉				Pars II nutat. in long.	Argumentum: longitudo ☉			
—	—	+	+		—	—	+	+
0ˢ	VIˢ	0°	IIIˢ	IXˢ	0,''000	IIIˢ	IXˢ	0°	VIˢ	XIIˢ
		5			0, 195			25		
		10			0, 384			20		
		15			0, 561			15		
		20			0, 721			10		
		25			0, 860			5		
I	VII	0	IV	X	0, 972	II	VIII	0	V	XI
		5			1, 054			25		
		10			1, 105			20		
I	VII	15	IV	X	1, 122	I	VII	15	IV	X

En jam tabulas has, illarumque uſum.

NVTATIONIS TABVLAE VNIVERSALES.

TABVLA I.

Pro nutatione in longitudinem.

PARS I.

Argumentum: longitudo nodi ascendentis lunae.

Grad.	0s 6s — +	Diff.	1s 7s — +	Diff.	2s 8s — +	Diff.	
0	0,"000	0,"315	9,"018	0,"271	15,"619	0,"155	30
1	0, 315	0, 314	9, 289	0, 269	15, 774	0, 151	29
2	0, 629	0, 315	9, 558	0, 265	15, 925	0, 145	28
3	0, 944	0, 314	10, 823	0, 262	16, 070	0, 140	27
4	1, 258	0, 314	10, 085	0, 259	16, 210	0, 136	26
5	1, 572	0, 313	10, 344	0, 257	16, 346	0, 130	25
6	1, 885	0, 313	10, 601	0, 253	16, 476	0, 126	24
7	2, 198	0, 312	10, 854	0, 250	16, 602	0, 120	23
8	2, 510	0, 311	11, 104	0, 246	16, 722	0, 116	22
9	2, 821	0, 311	11, 350	0, 243	16, 838	0, 110	21
10	3, 132	0, 309	11, 593	0, 239	16, 948	0, 105	20
11	3, 441	0, 309	11, 832	0, 236	17, 053	0, 100	19
12	3, 750	0, 307	12, 068	0, 232	17, 153	0, 095	18
13	4, 057	0, 306	12, 300	0, 228	17, 248	0, 089	17
14	4, 363	0, 305	12, 528	0, 225	17, 337	0, 084	16
15	4, 668	0, 303	12, 753	0, 221	17, 421	0, 079	15
16	4, 971	0, 302	12, 974	0, 217	17, 500	0, 074	14
17	5, 273	0, 300	13, 191	0, 212	17, 574	0, 068	13
18	5, 573	0, 299	13, 403	0, 208	17, 642	0, 062	12
19	5, 872	0, 297	13, 611	0, 205	17, 704	0, 058	11
20	6, 169	0, 295	13, 816	0, 200	17, 762	0, 052	10
21	6, 464	0, 292	14, 016	0, 196	17, 814	0, 046	9
22	6, 756	0, 291	14, 212	0, 192	17, 860	0, 041	8
23	7, 047	0, 289	14, 404	0, 187	17, 901	0, 036	7
24	7, 336	0, 286	14, 591	0, 183	17, 937	0, 030	6
25	7, 622	0, 284	14, 774	0, 178	17, 967	0, 025	5
26	7, 906	0, 282	14, 952	0, 174	17, 992	0, 019	4
27	8, 188	0, 279	15, 126	0, 169	18, 011	0, 014	3
28	8, 467	0, 277	15, 295	0, 165	18, 025	0, 008	2
29	8, 744	0, 274	15, 460	0, 159	18, 033	0, 001	1
30	9, 018		15, 619		18, 034		0
	+ —	Diff.	+ —	Diff.	+ —	Diff.	Grad.
	11s 5s		10s 4s		9s 3s		

NVTATIONIS TABVLAE VNIVERSALES.

TABVLA II.

Argumentum pro nutatione in declinationem:

(☊ ☀ — long. ☊ ☾)

Argumentum pro nutatione in aſcenſionem rectam:

(☊ ☀ — long. ☊ ☾ — III ſigna.)

Si declinatio auſtralis, argumentis VI ſigna adde.

Grad.	0ˢ 6ˢ + —	Diff.	1ˢ 7ˢ +	Diff.	2ˢ 8ˢ + —	Diff.	
0	0,"000	0,"147	4,"208	0,"126	7,"288	0,"072	30
1	0, 147	0, 147	4, 334	0, 126	7, 360	0, 070	29
2	0, 294	0, 146	4, 459	0, 124	7, 430	0, 068	28
3	0, 440	0, 147	4, 583	0, 123	7, 498	0, 065	27
4	0, 587	0, 146	4, 706	0, 121	7, 563	0, 064	26
5	0, 733	0, 147	4, 827	0, 119	7, 627	0, 061	25
6	0, 880	0, 146	4, 946	0, 118	7, 688	0, 058	24
7	1, 026	0, 145	5, 064	0, 117	7, 746	0, 056	23
8	1, 171	0, 145	5, 181	0, 115	7, 802	0, 054	22
9	1, 316	0, 145	5, 296	0, 113	7, 856	0, 052	21
10	1, 461	0, 145	5, 409	0, 112	7, 908	0, 049	20
11	1, 606	0, 144	5, 521	0, 110	7, 957	0, 046	19
12	1, 750	0, 143	5, 631	0, 108	8, 003	0, 044	18
13	1, 893	0, 143	5, 739	0, 107	8, 047	0, 042	17
14	2, 036	0, 142	5, 846	0, 105	8, 089	0, 039	16
15	2, 178	0, 142	5, 951	0, 102	8, 128	0, 037	15
16	2, 320	0, 140	6, 053	0, 101	8, 165	0, 034	14
17	2, 460	0, 140	6, 154	0, 100	8, 199	0, 032	13
18	2, 600	0, 140	6, 254	0, 097	8, 231	0, 029	12
19	2, 740	0, 138	6, 351	0, 095	8, 260	0, 027	11
20	2, 878	0, 138	6, 446	0, 094	8, 287	0, 025	10
21	3, 016	0, 136	6, 540	0, 091	8, 312	0, 021	9
22	3, 152	0, 136	6, 631	0, 090	8, 333	0, 019	8
23	3, 288	0, 135	6, 721	0, 087	8, 352	0, 017	7
24	3, 423	0, 133	6, 808	0, 085	8, 369	0, 014	6
25	3, 556	0, 133	6, 893	0, 083	8, 383	0, 012	5
26	3, 689	0, 131	6, 976	0, 082	8, 395	0, 009	4
27	3, 820	0, 131	7, 058	0, 079	8, 404	0, 006	3
28	3, 951	0, 129	7, 137	0, 076	8, 410	0, 004	2
29	4, 080	0, 128	7, 213	0, 075	8, 414	0, 001	1
30	4, 208		7, 288		8, 415		0
	— + 11ˢ 5ˢ	Diff.	— + 10ˢ 4ˢ	Diff.	— + 9ˢ 3ˢ	Diff.	Grad.

NVTATIONIS TABVLAE VNIVERSALES.

TABVLA III.

Argumentum pro nutatione in declinationem:

(☊ * + long. ☊☾)

Argumentum pro nutatione in aſcenſionem rectam:

(☊ * + long. ☊☾ — III ſigna.)

Si declinatio auſtralis, argumentis VI ſigna adde.

Grad.	0ˢ 6ˢ + —	Diff.	1ˢ 7ˢ + —	Diff.	2ˢ 8ˢ + —	Diff.	
0	0,"000	0,"022	0,"617	0,"018	1,"068	0,"010	30
1	0, 022	0, 021	0, 635	0, 018	1, 078	0, 011	29
2	0, 043	0, 022	0, 653	0, 018	1, 089	0, 010	28
3	0, 065	0, 021	0, 671	0, 018	1, 099	0, 009	27
4	0, 086	0, 021	0, 689	0, 018	1, 108	0, 009	26
5	0, 107	0, 022	0, 707	0, 018	1, 117	0, 009	25
6	0, 129	0, 021	0, 725	0, 017	1, 126	0, 009	24
7	0, 150	0, 022	0, 742	0, 017	1, 135	0, 008	23
8	0, 172	0, 021	0, 759	0, 017	1, 143	0, 008	22
9	0, 193	0, 021	0, 776	0, 017	1, 151	0, 008	21
10	0, 214	0, 021	0, 793	0, 016	1, 159	0, 007	20
11	0, 235	0, 021	0, 809	0, 016	1, 166	0, 007	19
12	0, 256	0, 021	0, 825	0, 016	1, 173	0, 006	18
13	0, 277	0, 021	0, 841	0, 016	1, 179	0, 006	17
14	0, 298	0, 021	0, 857	0, 015	1, 185	0, 006	16
15	0, 319	0, 021	0, 872	0, 015	1, 191	0, 005	15
16	0, 340	0, 020	0, 887	0, 015	1, 196	0, 005	14
17	0, 360	0, 021	0, 902	0, 014	1, 201	0, 005	13
18	0, 381	0, 020	0, 916	0, 015	1, 206	0, 004	12
19	0, 401	0, 021	0, 931	0, 014	1, 210	0, 004	11
20	0, 422	0, 020	0, 945	0, 013	1, 214	0, 004	10
21	0, 442	0, 020	0, 958	0, 014	1, 218	0, 003	9
22	0, 462	0, 020	0, 972	0, 013	1, 221	0, 003	8
23	0, 482	0, 020	0, 985	0, 013	1, 224	0, 002	7
24	0, 502	0, 019	0, 998	0, 012	1, 226	0, 002	6
25	0, 521	0, 020	1, 010	0, 012	1, 228	0, 002	5
26	0, 541	0, 019	1, 022	0, 012	1, 230	0, 001	4
27	0, 560	0, 019	1, 034	0, 012	1, 231	0, 001	3
28	0, 579	0, 019	1, 046	0, 011	1, 232	0, 000	2
29	0, 598	0, 019	1, 057	0, 011	1, 233	0, 000	1
30	0, 617		1, 068		1, 233		0
	— + 11ˢ 5ˢ	Diff.	— + 10ˢ 4ˢ	Diff.	— + 9ˢ 3ˢ	Diff.	Grad.

NVTATIONIS TABVLAE VNIVERSALES.

TABVLA IV.

Pro nutatione in aſcenſionem rectam.

Argumentum: longitudo nodi aſcendentis lunae.

Grad.	0ˢ 6ˢ — +	Diff.	1ˢ 7ˢ — +	Diff.	2ˢ 8ˢ — +	Diff.	
0	0,"000	0,"289	8,"272	0,"249	14,"328	0,"142	30
1	0, 289	0, 288	8, 521	0, 246	14, 470	0, 137	29
2	0, 577	0, 289	8, 767	0, 244	14, 607	0, 134	28
3	0, 865	0, 288	9, 011	0, 240	14, 741	0, 129	27
4	1, 154	0, 288	9, 251	0, 238	14, 870	0, 124	26
5	1, 442	0, 287	9, 489	0, 235	14, 994	0, 120	25
6	1, 729	0, 287	9, 724	0,"233	15, 114	0, 116	24
7	2, 016	0, 287	9, 957	0, 229	15, 230	0, 110	23
8	2, 303	0, 285	10, 186	0, 225	15, 340	0, 105	22
9	2, 588	0, 285	10, 411	0, 223	15, 445	0, 101	21
10	2, 873	0, 284	10, 634	0, 220	15, 546	0, 096	20
11	3, 157	0, 283	10, 854	0, 216	15, 642	0, 092	19
12	3, 440	0, 282	11, 070	0, 213	15, 734	0, 087	18
13	3, 722	0, 280	11, 283	0, 209	15, 821	0, 082	17
14	4, 002	0, 280	11, 492	0, 206	15, 903	0, 077	16
15	4, 282	0, 278	11, 698	0, 203	15, 980	0, 073	15
16	4, 560	0, 277	11, 901	0, 199	16, 053	0, 067	14
17	4, 837	0, 275	12, 100	0, 195	16, 120	0, 062	13
18	5, 112	0, 274	12, 295	0, 191	16, 182	0, 058	12
19	5, 386	0, 272	12, 486	0, 187	16, 240	0, 052	11
20	5, 658	0, 271	12, 673	0, 184	16, 292	0, 048	10
21	5, 929	0, 269	12, 857	0, 180	16, 340	0, 043	9
22	6, 198	0, 266	13, 037	0, 175	16, 383	0, 038	8
23	6, 464	0, 265	13, 212	0, 172	16, 421	0, 034	7
24	6, 729	0, 263	13, 384	0, 168	16, 453	0, 028	6
25	6, 992	0, 261	13, 552	0, 163	16, 481	0, 023	5
26	7, 253	0, 258	13, 715	0, 160	16, 504	0, 017	4
27	7, 511	0, 256	13, 875	0, 155	16, 521	0, 013	3
28	7, 767	0, 254	14, 030	0, 151	16, 534	0, 008	2
29	8, 021	0, 251	14, 181	0, 147	16, 542	0, 001	1
30	8, 272		14, 328		16, 543		0
	+ — 11ˢ 5ˢ	Diff.	+ — 10ˢ 4ˢ	Diff.	+ — 9ˢ 3ˢ	Diff.	Grad.

NVTATIONIS TABVLAE VNIVERSALES.

TABVLA V.

Pro nutatione in ascensionem rectam.

Argumenta: $\left(\text{Æ}* - \text{long.}\ \Omega\ ☾ \begin{smallmatrix} +\alpha \\ +\beta \end{smallmatrix}\right)$ et $\left(\text{Æ}* - \text{long.}\ \Omega\ ☾ \begin{smallmatrix} -\alpha \\ -\beta \end{smallmatrix}\right)$.

Si declinatio australis, argumentis VI signa adde.

Grad.	0s	1s	2s	3s	4s	5s	
0	157,"925	163,"561	178,"962	200,"000	221,"038	236,"439	30
1	157, 931	163, 934	179, 601	200, 734	221, 671	236, 800	29
2	157, 950	164, 318	180, 247	201, 468	222, 297	237, 151	28
3	157, 982	164, 712	180, 898	202, 202	222, 916	237, 490	27
4	158, 027	165, 118	181, 555	202, 935	223, 528	237, 817	26
5	158, 085	165, 534	182, 218	203, 667	224, 134	238, 133	25
6	158, 155	165, 960	182, 886	204, 398	224, 732	238, 438	24
7	158, 238	166, 397	183, 560	205, 128	225, 322	238, 731	23
8	158, 334	166, 844	184, 238	205, 856	225, 905	239, 012	22
9	158, 442	167, 301	184, 921	206, 582	226, 479	239, 281	21
10	158, 564	167, 768	185, 609	207, 306	227, 046	239, 538	20
11	158, 698	168, 245	186, 301	208, 028	227, 604	239, 783	19
12	158, 844	168, 732	186, 998	208, 748	228, 154	240, 016	18
13	159, 003	169, 228	187, 698	209, 465	228, 696	240, 237	17
14	159, 174	169, 733	188, 402	210, 179	229, 228	240, 446	16
15	159, 358	170, 248	189, 110	210, 890	229, 752	240, 642	15
16	159, 554	170, 772	189, 821	211, 598	230, 267	240, 826	14
17	159, 763	171, 304	190, 535	212, 302	230, 772	240, 997	13
18	159, 984	171, 846	191, 252	213, 002	231, 268	241, 156	12
19	160, 217	172, 396	191, 972	213, 699	231, 755	241, 302	11
20	160, 462	172, 954	192, 694	214, 391	232, 232	241, 436	10
21	160, 719	173, 521	193, 418	215, 079	232, 699	241, 558	9
22	160, 988	174, 095	194, 144	215, 762	233, 156	241, 666	8
23	161, 269	174, 678	194, 872	216, 440	233, 603	241, 762	7
24	161, 562	175, 268	195, 602	217, 114	234, 040	241, 845	6
25	161, 867	175, 866	196, 333	217, 782	234, 466	241, 915	5
26	162, 183	176, 472	197, 065	218, 445	234, 882	241, 973	4
27	162, 510	177, 084	197, 798	219, 102	235, 288	242, 018	3
28	162, 849	177, 703	198, 532	219, 753	235, 682	242, 050	2
29	163, 200	178, 329	199, 266	220, 399	236, 066	242, 069	1
30	163, 561	178, 962	200, 000	221, 038	236, 439	242, 075	0
	11s	10s	9s	8s	7s	6s	Grad.

NVTATIONIS TABVLAE VNIVERSALES.

TABVLA VI.

Pro nutatione in ascensionem rectam.

Argumenta: $\left(\text{Æ}* + \text{long.}\ \Omega\ ☾ \begin{smallmatrix}+\alpha\\+\beta\end{smallmatrix}\right)$ et $\left(\text{Æ}* + \text{long.}\ \Omega\ ☾ \begin{smallmatrix}-\alpha\\-\beta\end{smallmatrix}\right)$.

Si declinatio australis, his argumentis VI signa adde.

Grad.	0s	1s	2s	3s	4s	5s	
0	193,"835	194,"661	196,"917	200,"000	203,"083	205,"339	30
1	193, 836	194, 716	197, 011	200, 108	203, 175	205, 392	29
2	193, 839	194, 772	197, 106	200, 215	203, 267	205, 443	28
3	193, 844	194, 830	197, 201	200, 323	203, 358	205, 493	27
4	193, 851	194, 889	197, 297	200, 430	203, 447	205, 541	26
5	193, 859	194, 950	197, 394	200, 537	203, 536	205, 587	25
6	193, 869	195, 012	197, 492	200, 644	203, 624	205, 632	24
7	193, 881	195, 076	197, 591	200, 751	203, 710	205, 675	23
8	193, 895	195, 142	197, 690	200, 858	203, 796	205, 716	22
9	193, 911	195, 209	197, 791	200, 964	203, 880	205, 756	21
10	193, 929	195, 277	197, 891	201, 070	203, 963	205, 793	20
11	193, 949	195, 347	197, 993	201, 176	204, 044	205, 829	19
12	193, 970	195, 419	198, 095	201, 282	204, 125	205, 863	18
13	193, 993	195, 491	198, 198	201, 387	204, 205	205, 896	17
14	194, 018	195, 565	198, 301	201, 491	204, 283	205, 926	16
15	194, 045	195, 641	198, 404	201, 596	204, 359	205, 955	15
16	194, 074	195, 717	198, 509	201, 699	204, 435	205, 982	14
17	194, 104	195, 795	198, 613	201, 802	204, 509	206, 007	13
18	194, 137	195, 875	198, 718	201, 905	204, 581	206, 030	12
19	194, 171	195, 956	198, 824	202, 007	204, 653	206, 051	11
20	194, 207	196, 037	198, 930	202, 109	204, 723	206, 071	10
21	194, 244	196, 120	199, 036	202, 209	204, 791	206, 089	9
22	194, 284	196, 204	199, 142	202, 310	204, 858	206, 105	8
23	194, 325	196, 290	199, 249	202, 409	204, 924	206, 119	7
24	194, 368	196, 376	199, 356	202, 508	204, 988	206, 131	6
25	194, 413	196, 464	199, 463	202, 606	205, 050	206, 141	5
26	194, 459	196, 553	199, 570	202, 703	205, 111	206, 149	4
27	194, 507	196, 642	199, 677	202, 799	205, 170	206, 156	3
28	194, 557	196, 733	199, 785	202, 894	205, 228	206, 161	2
29	194, 608	196, 825	199, 892	202, 989	205, 284	206, 164	1
30	194, 661	196, 917	200, 000	203, 083	205, 339	206, 165	0
	11s	10s	9s	8s	7s	6s	Grad.

NVTATIONIS TABVLAE VNIVERSALES.

TABVLA VII.

Pro nutatione in aſcenſionem rectam.

Argumentum:

Longitudo ☊ ☾ + 3 ſign.

Grad.	0ˢ	1ˢ	2ˢ	3ˢ	4ˢ	5ˢ	
0	216,"543	214,"328	208,"272	200,"000	191,"728	185,"672	30
1	216, 542	214, 181	208, 021	199, 711	191, 479	185, 530	29
2	216, 534	214, 030	207, 767	199, 423	191, 233	185, 393	28
3	216, 521	213, 875	207, 511	199, 134	190, 989	185, 259	27
4	216, 504	213, 715	207, 253	198, 846	190, 749	185, 130	26
5	216, 481	213, 552	206, 992	198, 558	190, 511	185, 006	25
6	216, 453	213, 384	206, 729	198, 271	190, 276	184, 886	24
7	216, 421	213, 212	206, 464	197, 984	190, 043	184, 770	23
8	216, 383	213, 037	206, 198	197, 697	189, 814	184, 660	22
9	216, 340	212, 857	205, 929	197, 412	189, 589	184, 555	21
10	216, 292	212, 673	205, 658	197, 127	189, 366	184, 454	20
11	216, 240	212, 486	205, 386	196, 843	189, 146	184, 358	19
12	216, 182	212, 295	205, 112	196, 560	188, 930	184, 266	18
13	216, 120	212, 100	204, 837	196, 278	188, 717	184, 179	17
14	216, 053	211, 901	204, 560	195, 998	188, 508	184, 097	16
15	215, 980	211, 698	204, 282	195, 718	188, 302	184, 020	15
16	215, 903	211, 492	204, 002	195, 440	188, 099	183, 947	14
17	215, 821	211, 283	203, 722	195, 163	187, 900	183, 880	13
18	215, 734	211, 070	203, 440	194, 888	187, 705	183, 818	12
19	215, 642	210, 854	203, 157	194, 614	187, 514	183, 760	11
20	215, 546	210, 634	202, 873	194, 342	187, 327	183, 708	10
21	215, 445	210, 411	202, 588	194, 071	187, 143	183, 660	9
22	215, 340	210, 186	202, 303	193, 802	186, 963	183, 617	8
23	215, 230	209, 957	202, 016	193, 536	186, 788	183, 579	7
24	215, 114	209, 724	201, 729	193, 271	186, 616	183, 547	6
25	214, 994	209, 489	201, 442	193, 008	186, 448	183, 519	5
26	214, 870	209, 251	201, 154	192, 747	186, 285	183, 496	4
27	214, 741	209, 011	200, 866	192, 489	186, 125	183, 479	3
28	214, 607	208, 767	200, 577	192, 233	185, 970	183, 466	2
29	214, 470	208, 521	200, 289	191, 979	185, 819	183, 458	1
30	214, 328	208, 272	200, 000	191, 728	185, 672	183, 457	0
	11ˢ	10ˢ	9ˢ	8ˢ	7ˢ	6ˢ	Grad.

NVTATIONIS TABVLAE VNIVERSALES.

TABVLA VIII.

Pro nutatione in declinationem.

Argumentum:

(☊ ✱ — long. ☊ ☾.)

Grad.	9ˢ	10ˢ	11ˢ	0ˢ	1ˢ	2ˢ	
0	1,"585	2,"712	5,"792	10,"000	14,"208	17,"288	30
1	1, 586	2, 787	5, 920	10, 147	14, 334	17, 360	29
2	1, 590	2, 863	6, 049	10, 294	14, 459	17, 430	28
3	1, 596	2, 942	6, 180	10, 440	14, 583	17, 498	27
4	1, 605	3, 024	6, 311	10, 587	14, 706	17, 563	26
5	1, 617	3, 107	6, 444	10, 733	14, 827	17, 627	25
6	1, 631	3, 192	6, 577	10, 880	14, 946	17, 688	24
7	1, 648	3, 279	6, 712	11, 026	15, 064	17, 746	23
8	1, 667	3, 369	6, 848	11, 171	15, 181	17, 802	22
9	1, 688	3, 460	6, 984	11, 316	15, 296	17, 856	21
10	1, 713	3, 554	7, 122	11, 461	15, 409	17, 908	20
11	1, 740	3, 649	7, 260	11, 606	15, 521	17, 957	19
12	1, 769	3, 746	7, 400	11, 750	15, 631	18, 003	18
13	1, 801	3, 846	7, 540	11, 893	15, 739	18, 047	17
14	1, 835	3, 947	7, 680	12, 036	15, 846	18. 089	16
15	1, 872	4, 049	7, 822	12, 178	15, 951	18, 128	15
16	1, 911	4, 154	7, 964	12, 320	16, 053	18, 165	14
17	1, 953	4, 261	8, 107	12, 460	16, 154	18, 199	13
18	1, 997	4, 369	8, 250	12, 600	16, 254	18, 231	12
19	2, 043	4, 479	8, 394	12, 740	16, 351	18, 260	11
20	2, 092	4, 591	8, 539	12, 878	16, 446	18, 287	10
21	2, 144	4, 704	8, 684	13, 016	16, 540	18, 312	9
22	2, 198	4, 819	8, 829	13, 152	16, 631	18, 333	8
23	2, 254	4, 936	8, 974	13, 288	16, 721	18, 352	7
24	2, 312	5, 054	9, 120	13, 423	16, 808	18, 369	6
25	2, 373	5, 173	9, 267	13, 556	16, 893	18, 383	5
26	2, 437	5, 294	9, 413	13, 689	16, 976	18, 395	4
27	2, 502	5, 417	9, 560	13, 820	17, 058	18, 404	3
28	2, 570	5, 541	9, 706	13, 951	17, 137	18, 410	2
29	2, 640	5, 666	9, 853	14, 080	17, 213	18, 414	1
30	2, 712	5, 792	10, 000	14, 208	17, 288	18, 415	0
	8ˢ	7ˢ	6ˢ	5ˢ	4ˢ	3ˢ	Grad.

NVTATIONIS TABVLAE VNIVERSALES.

TABVLA IX.

Pro nutatione in declinationem.

Argumentum:

(AR. ✱ + long. ☊ ☾)

Grad	9ˢ	10ˢ	11ˢ	0ˢ	1ˢ	2ˢ	
0	8,"767	8,"932	9,"383	10,"000	10,"617	11,"068	30
1	8, 767	8, 943	9, 402	10, 022	10, 635	11, 078	29
2	8, 768	8, 954	9, 421	10, 043	10, 653	11, 089	28
3	8, 769	8, 966	9, 440	10, 065	10, 671	11, 099	27
4	8, 770	8, 978	9, 459	10, 086	10, 689	11, 108	26
5	8, 772	8, 990	9, 479	10, 107	10, 707	11, 117	25
6	8, 774	9, 002	9, 498	10, 129	10, 725	11, 126	24
7	8, 776	9, 015	9, 518	10, 150	10, 742	11, 135	23
8	8, 779	9, 028	9, 538	10, 172	10, 759	11, 143	22
9	8, 782	9, 042	9, 558	10, 193	10, 776	11, 151	21
10	8, 786	9, 055	9, 578	10, 214	10, 793	11, 159	20
11	8, 790	9, 069	9, 599	10, 235	10, 809	11, 166	19
12	8, 794	9, 084	9, 619	10, 256	10, 825	11, 173	18
13	8, 799	9, 098	9, 640	10, 277	10, 841	11, 179	17
14	8, 804	9, 113	9, 660	10, 298	10, 857	11, 185	16
15	8, 809	9, 128	9, 681	10, 319	10, 872	11, 191	15
16	8, 815	9, 143	9, 702	10, 340	10, 887	11, 196	14
17	8, 821	9, 159	9, 723	10, 360	10, 902	11, 201	13
18	8, 827	9, 175	9, 744	10, 381	10, 916	11, 206	12
19	8, 834	9, 191	9, 765	10, 401	10, 931	11, 210	11
20	8, 841	9, 207	9, 786	10, 422	10, 945	11, 214	10
21	8, 849	9, 224	9, 807	10, 442	10, 958	11, 218	9
22	8, 857	9, 241	9, 828	10, 462	10, 972	11, 221	8
23	8, 865	9, 258	9, 850	10, 482	10, 985	11, 224	7
24	8, 874	9, 275	9, 871	10, 502	10, 998	11, 226	6
25	8, 883	9, 293	9, 893	10, 521	11, 010	11, 228	5
26	8, 892	9, 311	9, 914	10, 541	11, 022	11, 230	4
27	8, 901	9, 329	9, 935	10, 560	11, 034	11, 231	3
28	8, 911	9, 347	9, 957	10, 579	11, 046	11, 232	2
29	8, 922	9, 365	9, 978	10, 598	11, 057	11, 233	1
30	8, 932	9, 383	10, 000	10, 617	11, 068	11, 233	0
	8ˢ	7ˢ	6ˢ	5ˢ	4ˢ	3ˢ	Grad.

Problema I.

Invenire effectum nutationis in longitudinem pro dato tempore per tabulam I.

Cum effectus hujus nutationis in longitudinem omnibus aſtris ſine diſcrimine communis ſit: a ſola longitudine nodi lunae aſcendentis pendet. Aſſumta hac pro argumento tabulae I, exquire numerum competentem, et habebis illico quantitatem nutationis quaeſitam.

Exemplum.

Quaeratur effectus hic nutationis pro 1 die Januarii 1806.

Eſt pro illa die longitudo nodi lunae aſcendentis ex ephemeride aſtronomica petita $= 9^s\ 7^\circ\ 14'$.

Per tabulam I pro argumento $9^s\ 7^\circ$ invenies . .	$+ 17,''901$
Partem proportionalem pro $14'$	$- 0,\ 008$
Nutatio in longitudinem	$+ 17,''893$

Si ſecundam partem nutationis habere cupis: habes longitudinem ſolis pro illa die $= 9^s\ 10^\circ\ 27'$, duplum $= 6^s\ 20^\circ\ 54'$, quo argumento ex eadem tabula invenies $+ 6,''434$, adeoque partem ſecundam hujus nutationis $= + 6,''434 \times 0,0622 = + 0,''400$. Ergo omnis nutatio in longitudinem $= + 17,''893 + 0,''400 = + 18,''293$.

Problema II.

Invenire effectum nutationis in aſcenſionem rectam per tabulam II, III et IV, dato tempore pro ſidere dato.

1) A data aſcenſione recta fixae ſubtrahe longitudinem nodi lunae; adde vel ſubtrahe a reſiduo III ſigna, et habes argumentum tabulae II.

2) Ad datam aſcenſionem rectam fixae adde longitudinem nodi lunae; ſubtrahe vel adde III ſigna, et conficies argumentum pro tabula III.

3) Si declinatio fixae propoſitae auſtralis eſt, adde duobus his argumentis VI ſigna, vel, quod idem eſt, ab iis totidem ſigna ſubtrahe.

4) Quaere in tabula II et III numeros argumentis his reſpondentes, quorum ſummam algebraicam duc in tangentem declinationis.

5) Cum argumento longitudinis nodi lunae cape in tabula IV numerum convenientem, qui cum illo No. 4 invento in unam ſummam algebraicam conflatus, petitam nutationis quantitatem in aſcenſionem rectam dabit.

Exemplum I.

Sit inveſtiganda nutatio in aſcenſionem rectam α Aurigae die 1 Januarii, 1807. Aſcenſio recta hujus ſtellae eſt $2^s\ 15^\circ\ 36,'8$, ejusdem declinatio borealis $45^\circ\ 47'\ 10''$, et longitudo nodi lunae $8^s\ 17^\circ\ 51,'4$.

AR. $* = 2^s\ 15^\circ\ 36,'8$
Long. $\Omega\,\mathbb{C} = \mp] \quad 8\ 17\ 51,4$

Arg. tab. II $= 5\ 27\ 45,4 - \text{III}^s = 2^s\ 27^\circ\ 45,'4 = +\ 8,''408$
Arg. tab. III $= 11\ 3\ 28,2 - \text{III}^s = 8\ 3\ 28,2 = -\ 1,''103$

$+\ 7,305 = \log.\ 0,8636202$
tang. decl. $= \quad 0,0119187$

$0,8755389 = +\ 7,''508$
Arg. tab. IV $= 8^s\ 17^\circ\ 51,'4 \ldots\ldots\ldots + 16,173$

Summa $+\ 23,''681 =$ nut. α Aurig. in AR.

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Exemplum II.

R 2

Sit nutationis effectus in aſcenſionem rectam fixae α Lyrae pro 28 Julii 1800 quaerendus. Invenimus pro hoc tempore hujus aſcenſionem rectam $9^s\ 7^\circ\ 32,'8$, declinationem borealem $38^\circ\ 36'\ 24''$, et longitudinem nodi lunae $0^s\ 22^\circ\ 11,'7$.

AR. $* = 9^s\ 7^\circ\ 32,'8$
Long. $\Omega\,\mathbb{C} = \mp] \quad 0\ 22\ 11,7$

Arg. tab. II $= 8\ 15\ 21,1 - \text{III}^s = 5^s\ 15^\circ\ 21,'1 = +\ 2,''128$
Arg. tab. III $= 9\ 29\ 44,5 - \text{III}^s = 6\ 29\ 44,5 = -\ 0,612$

$+\ 1,''516 = \log.\ 0,1806992$
tang. decl. $= \quad 9.9022641$

$0,0829633 = +\ 1,''211$
Arg. tab. IV $= 0^s\ 22^\circ\ 11,'7 \ldots\ldots\ldots - 6,250$

Summa $= -\ 5,''039 =$ nut. α Lyrae in AR.

Exemplum III.

Quaeratur nutatio in aſcenſionem rectam fixae α Piſcis auſtrini pro 5 Maji 1800. Aſcenſio recta pro hoc tempore eſt 11ˢ 11° 38,'7, ejusdem declinatio 30° 40' 31" auſtralis, et longitudo nodi lunae 0ˢ 26° 38,'6.

AR. * = 11ˢ 11° 38,'7
Long. ☊☾ = ♑] 0 26 38, 6

Arg. tab. II = 10 15 0, 1 — IIIˢ + VIˢ = 1ˢ 15° 0,'1 = + 5,"951
Arg. tab. III = 0 8 17, 3 — IIIˢ + VIˢ = 3 8 17, 3 = + 1, 220

+ 7, 171 = log. 0,8555797
tang. decl. = 9,7731814

0,6287611 = + 4,"254
Arg. tab. IV = 0ˢ 26° 38,'6 . . . . . — 7, 419

Summa = — 3,"165 = nut. α. Piſcis auſtr. in AR.

Exemplum IV.

Sit effectus nutationis in aſcenſionem rectam pro ſtella Polari die 23 Julii 1800 inveniendus. Pro hoc tempore eſt aſcenſio recta 0ˢ 13° 7,'0, declinatio borealis 88° 14' 37", et nodi aſcendentis lunae longitudo 0ˢ 22° 27,'6.

AR. * = 0ˢ 13° 7,'0
Long. ☊☾ = ♑] 0 22 27, 6

Arg. tab. II = 11 20 39, 4 — IIIˢ = 8ˢ 20° 39,'4 = — 8,"303
Arg. tab. III = 1 5 34, 6 — IIIˢ = 10 5 34, 6 = — 1, 003

— 9,"306 = log. 0,9687630
tang. decl. = 1,5133659

2,4821289 = — 303,"479
Arg. tab. IV = 0ˢ 22° 27,'6 . . . . . — 6, 320

Summa = — 309,"799 = nutat. in AR. ſtellae Polaris.

Problema III.

Invenire effectum nutationis in declinationem dato tempore et ſidere per tabulas II et III.

1) A data aſcenſione recta ſideris ſubtrahe longitudinem nodi lunae; reſiduum eſt argumentum tabulae II.

2) Ad datam aſcenſionem rectam ſideris adde longitudinem nodi lunae; ſumma eſt argumentum tabulae III.

3) Quantitates ex duabus his tabulis excerptae, et pro ſuis ſignis coaequatae, exhibebunt effectum nutationis in declinationem.

4) Si declinatio fixae auſtralis: ſigna mutantur; vel brevius, adde argumentis his duobus VI ſigna.

Exemplum I.

Quaeratur effectus nutationis in declinationem pro ſtella α Lyrae eodem tempore et iisdem elementis, ut in exemplo II problematis II.

AR * − ☊☾ = 8ˢ 15° 21,'1 = Arg. tab. II. = − 8,"141
AR * + ☊☾ = 9 29 44, 5 = Arg. tab. III. = − 1, 071
Summa − 9,"212 = nutat. α Lyrae in decl.

Exemplum II.

Sit nutatio in declinationem invenienda pro ſtella α Piscis auſtrini eodem tempore, ut ſupra pag. 132.

AR* − ☊☾ = 10ˢ 15° 0,'1 + VIˢ = 4ˢ 15° 0,'1 = Arg. tab. II. = + 5,"951
AR* + ☊☾ = 0 8 17, 3 + VIˢ = 6 8 17, 3 = Arg. tab. III. = − 0, 178
Summa + 5,"773 = nutat. α Piſc. auſtr. in decl.

Problema IV.

Invenire effectum nutationis in aſcenſionem rectam per tabulas V, VI et VII.

1) Cum data declinatione fixae argumenti loco quaere per tabulam pag. 29 et 30 angulum auxiliarem α, vel ubi opus fuerit, angulum β.

2) Angulum hunc ſubſidiarium adde et ſubtrahe a data aſcenſione recta fixae.

3) A duabus his quantitatibus ſubtrahe longitudinem nodi aſcendentis lunae, et habes argumenta duo tabulae V.

4) Ad duas ſupra dictas quantitates adde longitudinem nodi aſcendentis lunae, et habes argumenta duo tabulae VI.

5) Si declinatio fixae auſtralis: adjice omnibus argumentis VI ſigna, vel, quod idem eſt, deme VI ſigna.

6) Cum quatuor his argumentis exquire e tabula V et VI numeros reſpondentes, et e tabula VII cum argumento longitudinis nodi lunae, tribus ſignis aucto, numerum competentem.

7) A ſumma omnium quinque quantitatum, ſi 1000" abſtuleris, dabit illa quantitatem poſitivam nutationis in aſcenſionem rectam. Si vero illa ſumma minor 1000" eſt, ab illa detrahenda eſt, et reſiduum erit quantitas nutationis negativa.

8) Si angulum ſubſidiarium β loco α adhibueris, ſedulo notandum eſt, quantitates tabularum V et VI per 10 multiplicandas eſſe.

9) Aufer 8200" a ſumma harum quinque quantitatum, manebit quantitas poſitiva nutationis in aſcenſionem rectam. Si vero haec ſubtractio fieri nequit, a 8200" deme ſummam harum quantitatum; reſiduum erit quantitas negativa nutationis in aſcenſionem rectam.

Exemplum I.

Quaeratur eodem tempore et iisdem elementis ut ſupra pag. 131 effectus nutationis in aſcenſionem rectam α Aurigae. Argumento declinationis 45° 47′ 19" invenies angulum ſubſidiarium $\alpha = 2^s\ 24^\circ\ 5,'9$.

	AR * =	2^s	15°	36,'8		AR * =	2^s	15°	36,'8
Ang. ſubſ.	$\alpha = +$	2	24	5, 9	Ang. ſubſ.	$\alpha = -$	2	24	5, 9
		5	9	42, 7			11	21	30, 9
Long.	$\Omega\mathbb{C} = \mp]$	8	17	51, 4	Long.	$\Omega\mathbb{C} = \mp]$	8	17	51, 4
Arg. 1 tab. V =		8^s	21°	51,'3	Arg. 2 tab. V =		3^s	3°	39,'5
Arg. 3 tab. VI =		1	27	34, 1	Arg. 4 tab. VI =		8	9	22, 3

Arg. 5 tab. VII = long. $\Omega\mathbb{C}$ + III^s = 11^s 17° 51,'4

Arg. 1 =	205,"958	tab. V
Arg. 2 =	202, 686	
Arg. 3 =	196, 694	tab. VI
Arg. 4 =	202, 172	
Arg 5 =	216, 173	tab. VII
Summa =	1023,"683	
	1000	
	+23,"683	= nutat. α Aurigae in AR.

hanc quantitatem ſupra invenimus = +23, 681

Exemplum II.

Sit inveſtiganda nutationis quantitas in aſcenſionem rectam ſtellae α Lyrae iisdem elementis, ut in exemplo II ſupra pag. 131. Argumentum declinationis 38° 36′ 24" angulum α praebet 2^s 25° 25,'2.

AR * =	9ˢ	7°	32,'8
Ang. ſubſ. α =	+ 2	25	25, 2
	0	2	58, 0
Long. ☊☾ = ∓	0	22	11, 7
Arg. 1 tab. V =	11ˢ	10°	46,'3
Arg. 3 tab. VI =	0	25	9, 7

AR * =	9ˢ	7°	32,'8
Ang. ſubſ. α =	− 2	25	25, 2
	6	12	7, 6
Long. ☊☾ = ∓	0	22	11, 7
Arg. 2 tab. V =	5ˢ	19°	55,'9
Arg. 4 tab. VI =	7	4	19, 3

Arg. 5 tab. VII = long. ☊☾ + IIIˢ = 3ˢ 22° 11,"7

Arg. 1 =	160,"273	Tab. V.
Arg. 2 =	241, 427	
Arg. 3 =	194, 420	Tab. VI.
Arg. 4 =	205, 091	
Arg. 5 =	193, 750	Tab. VII.
Summa =	994, 961	
	1000	
	− 5,"039	= nutat. α Lyrae in AR.

Tab. II, III et IV hanc nutat. dederunt − 5,"039

Exemplum III.

Effectus nutationis in aſcenſionem rectam ſtellae α Piſcis auſtrini ſit inveſtigandus iisdem elementis et eodem tempore, ut ſupra pag. 132. Angulus auxiliaris erit = 2ˢ 26° 36,'8.

AR *=	11ˢ	11°	38,'7		AR *=	11ˢ	11°	38,'7
Ang. ſubſ. α =	+ 2	26	36, 8		Ang. ſubſ. α =	− 2	26	36, 8
	2	8	15, 5			8	15	1, 9
Long. ☊☾ = ∓	0	26	38, 6		Long. ☊☾ = ∓	0	26	38, 6
Arg. 1 tab. V =	11ˢ	11°	36,'9	+ VIˢ =	7ˢ	11°	36,'9	Arg. 2 tab. V = 7ˢ 18° 23,'3 + VIˢ = 1ˢ 18° 23,'3
Arg. 3 tab. VI =	3	4	54, 1	+ VIˢ =	9	4	54, 1	Arg. 4 tab. VI = 9 11 40, 5 + VIˢ = 3 11 40, 5

Arg. 5 tab. VII = long. ☊☾ + IIIˢ = 3ˢ 26° 38,'6

Arg. 1 =	231,"456	Tab. V.	
Arg. 2 =	172, 061		
Arg. 3 =	199,"474	Tab. VI.	
Arg. 4 =	201, 248		
Arg. 5 =	192, 581	Tab. VII.	
Summa =	996, 820		
	1000		
	− 3,"180	= nutat. α Pſc. auſtr. in AR.	
	− 3, 165		

ſupra hanc quantitatem invenimus

Exemplum IV.

Quaeratur nutatio in aſcenſionem rectam ſtellae Polaris pro eodem tempore et iisdem elementis, ut in exemplo priori IV problematis II pag. 132. Declinatio 88° 14' 37" praebet angulum ſubſidiarium $\beta = 2^s\ 10^\circ\ 58,'0$.

AR. * =	0^s	13°	7,'0		AR. * =	0^s	13°	7,'0
Ang. ſubſ. β = +	2	10	58, 0		Ang. ſubſ. β = −	2	10	58, 0
	2	24	5, 0			10	2	9, 0
Long. $\Omega\,\mathbb{C}$ = ∓]	0	22	27, 6		Long. $\Omega\,\mathbb{C}$ = ∓]	0	22	27, 6
Arg. 1 tab. V =	2^s	1	37, 4		Arg. 2 tab. V =	9^s	9°	41, 4
Arg. 3 tab. VI =	3	16	32, 6		Arg. 4 tab. VI =	10	24	36, 6

Arg. 5 tab. VII = long. $\Omega\,\mathbb{C}$ + III· = $3^s\ 22^\circ$ 27,'6

Arg. 1 =	180,"003	×	10 =	1800,"03	Tab. V.
Arg. 2 =	192, 918	×	10 =	1929, 18	
Arg. 3 =	201, 755	×	10 =	2017, 55	Tab. VI.
Arg. 4 =	194, 974	×	10 =	1949, 74	
Arg. 5 =	. . . . .			193, 68	Tab. VII.
			Summa =	7890, 18	
				8200	
				− 309,"82 = nutat. ſtellae Pol. in AR.	

Ex tab. II, III et IV hunc effect. invenimus − 309, 799

Problema V.

Invenire effectum nutationis in declinationem per tabulam VIII et IX.

1) Iisdem argumentis ſuperioribus problematis III No. 1 et 2 quaere in tabula VIII et ex tabula IX numeros competentes.

2) Ab illarum ſumma aufer 20", manebit quantitas nutationis poſitiva. Vel, ſi haec ſumma minor, a 20" ſubtrahenda eſt: reſiduum erit quantitas negativa nutationis quaeſitae.

Exemplum I.

Sit effectus nutationis in declinationem ſtellae α Lyrae inveſtigandus eodem tempore et iisdem elementis, ut in exemplo II problematis II.

Probl. III. Exempl. I. AR.* − $\Omega\,\mathbb{C}$ = $8^s\ 15^\circ$ 21,'1 = Arg. tab. VIII = 1,"859
AR.* + $\Omega\,\mathbb{C}$ = 9 29 44, 5 = Arg. tab. IX = 8, 929

Summa 10, 788
20

− 9,"212 = nutat. α Lyrae in decl.

loco citato inveniebatur . . − 9, 212

Exemplum II.

Quaeratur quantitas nutationis in declinationem pro ſtella α Piſcis auſtrini iisdem elementis, ut ſupra pag. 132

Probl. III. Exempl. II $\begin{cases} AR^* - \Omega\mathbb{C} + VI^s = 4^s\ 15^\circ\ 0,\ 1 = \text{Arg. tab. VIII} = 15,''951 \\ AR^* + \Omega\mathbb{C} + VI^s = 6\ \ 8\ 17,\ 3 = \text{Arg. tab. IX} = 9,\ 822 \end{cases}$

Summa = 25, 773

20

+ 5,''773 =

nutat. α Piſc. auſtr. in declin.

Tab. II et III dederunt ſupra pag. 133 + 5,''773

Problema VI.

Invenire effectum nutationis in aſcenſionem rectam et in declinationem per tabulas ſpeciales.

1) Pro data fixa e tabula ſpeciali, et e columna conveniente exquire cum argumento longitudinis nodi lunae numerum reſpondentem, habita, ubi opus fuerit, partium proportionalium ratione.

2) Cum tabulae hae ſpeciales ad rationem Bradlejanam 9,''55 : 7,''10 conſtructae ſint, eae ad noſtram 19,''2960 : 14,''3644 (pag. 116) mox revocari poſſunt, additis duntaxat $\frac{1}{35}$ nutationis partibus, tabulis his exhibitis, ſive poſitivis ſive negativis.

Exemplum.

Sit effectus nutationis in aſcenſionem rectam, et in declinationem pro α Tauri die 5 Januarii 1800 inveniendus, luna in nodo aſcendente $1^s\ 3^\circ\ 2,'7$ verſante. Erit:

a) in AR.

Ex tab. ſpec. nut. in AR. pro α♉ pag. 59 pro $\Omega\mathbb{C}$ $1^s\ 0^\circ$	+ 10,''07
Pars proportionalis pro $3^\circ\ 2,'7$	+ 0, 763
	+ 10,''833
Reductio ad noſtram rationem + $\frac{1}{35}$ (10,''833)	+ 0, 120
Effectus nutationis in AR pro $\Omega\mathbb{C}$ $1^s\ 3^\circ\ 2,'7$	+ 10,''953
Ex tab. II, III et IV invenietur	+ 11, 000
Ex tab. V, VI et VII — —	+ 10, 994

b) in declinationem.

Ex tab. ſpec. nut. in declin. erit pro $\Omega\mathbb{C}$ $1^s\ 0^\circ$	− 6,''10
Pars proportionalis pro $3^\circ\ 2,'7$	− 0, 387
	− 5,''713
Reductio ad rationem noſtram + $\frac{1}{35}$ (5,''713)	+ 0, 064
Effectus nutationis in declin. pro $\Omega\mathbb{C}$ $1^s\ 3^\circ\ 2,'7$	− 5,''777
Ex tab. II et III haec quantitas prodit	− 5, 809
Ex tab. VIII et IV — — — —	− 5, 809

Eodem prorſus modo, quo Cl. *CAMERARIVS* variatos aberrationis effectus, variatis fixarum aſcenſionibus rectis et declinationibus, indagaverat, idem in easdem variationes effectus nutationis, ex iisdem cauſis ortas, inquiſivit.

Differentiando formulam ſupra traditam, effectum nutationis in aſcenſionem rectam exhibentem, habetur:

$$d\,\text{nut. AR} = \text{tang. decl.} * \frac{[8.''415 \sin(\text{AR}* - \Omega\mathbb{C}) + 1.''232 \sin(\text{AR}* + \Omega\mathbb{C})\, d\,\text{AR} - - 8.''415 \cos(\text{AR}* - \Omega\mathbb{C}) + 1.''232 \cos(\text{AR}.* + \Omega\mathbb{C})\, d\,\text{decl.}]}{\cos.\text{decl.}*^2}$$

Ponendo iterum d Æ pariter ac d decl. $=$ 1°, patebit calculum repetenti, has aequationis partes, quae in 1.''232 ductae ſunt, tuto negligi poſſe, et errorem inde natum rariſſime ad decimam minuti ſecundi partem, et fere nunquam ad duas tertias unius minuti ſecundi aſſurrecturum eſſe. Neglectis itaque his partibus erit:

$$d\,\text{nut. AR.} = 8.''415\,[\sin(\text{AR.}* - \Omega\mathbb{C})\,\text{tang. decl.}*\,d\,\text{AR} - \frac{\cos(\text{AR} - \Omega\mathbb{C})\,d\,\text{decl.}]}{\cos.\text{decl.}*^2}$$

Hinc oriuntur tabulae duae ſequentes.

TABVLA I.

Pro variatione nutationis aſcenſionis rectae ob mutatam uno gradu aſcenſionem rectam.

Argumentum in fronte: declinatio *
Argumentum a latere: Æ * — Ω ☾

+	—	0°	10°	20°	30°	40°	50°	60°	70°	80°	+	—
° ′	° ′	″	″	″	″	″	″	″	″	″	° ′	° ′
0 0	6	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	6 0	0
10		0,000	0,005	0,009	0,015	0,021	0,030	0,044	0,070	0,145	20	
20		0,000	0,009	0,018	0,029	0,042	0,060	0,087	0,138	0,285	10	
1 0	7	0,000	0,013	0,027	0,042	0,062	0,088	0,127	0,202	0,417	5 0	11
10		0,000	0,017	0,034	0,055	0,079	0,113	0,164	0,259	0,535	20	
20		0,000	0,020	0,041	0,065	0,094	0,134	0,195	0,302	0,624	10	
2 0	8	0,000	0,022	0,046	0,073	0,107	0,152	0,220	0,350	0,721	4 0	10
10		0,000	0,024	0,050	0,080	0,116	0,164	0,239	0,379	0,783	20	
20		0,000	0,025	0,053	0,084	0,121	0,172	0,251	0,397	0,820	10	
3 0	9	0,000	0,026	0,054	0,085	0,123	0,175	0,254	0,403	0,833	3 0	9

TABVLA II.

Pro variatione nutationis aſcenſionis rectae ob mutatam uno gradu declinationem.

Argumentum in fronte: declinatio *
Argumentum a latere: Æ * — ☊☾.

— +	0°	10°	20°	30°	40°	50°	60°	70°	80°	+ —
s ° s	"	"	"	"	°	"	"	"	"	s ° s
0 0 6	0,147	0,151	0,166	0,196	0,250	0,356	0,588	1,256	4,871	6 0 0
10	0,145	0,149	0,164	0,193	0,246	0,350	0,579	1,237	4,797	20
20	0,138	0,142	0,156	0,184	0,235	0,334	0,552	1,180	4,577	10
1 0 7	0,127	0,131	0,144	0,170	0,217	0,308	0,509	1,087	4,219	5 0 11
10	0,113	0,116	0,127	0,150	0,192	0,272	0,450	0,962	3,732	20
20	0,094	0,098	0,107	0,126	0,161	0,229	0,378	0,807	3,131	10
2 0 8	0,073	0,076	0,083	0,098	0,125	0,178	0,294	0,628	2,436	4 0 10
10	0,050	0,052	0,057	0,067	0,085	0,121	0,200	0,428	1,662	20
20	0,025	0,027	0,029	0,034	0,043	0,062	0,102	0,218	0,846	10
3 0 9	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	3 0 9

Ex his apparet

1) Plerumque longe majorem eſſe variationem nutationis in aſcenſionem rectam, quae ex variata paululum declinatione oritur, ea, quae ex variata aequaliter aſcenſione recta provenit.

2) Summam, quae in ſtellis zodiacalibus ex variata uno gradu aſcenſione recta naſci poſſit, variationem nutationis aſcenſionis rectae eſſe 0,"123, ſummàm vero, quae in iisdem ſtellis ex variata uno gradu declinatione oriri queat, variationem nutationis aſcenſionis rectae eſſe 0,"250. Cum vero nunquam ſumma variatio ab aſcenſione recta paululum variata conſpirare poſſit cum ſumma variatione a declinatione aequaliter variata oriunda: ſummam, quae ab utraque ſimul uno gradu variata oriri poſſit, variationem in nutatione aſcenſionis rectae eſſe circiter 0,"28 in ſtellis zodiacalibus; in ſtellis vero polo propioribus longe majores naſci variationes, praeſertim variata paululum declinatione; ubi tamen pariter obſervandum, quod de variatione aberrationis in aſcenſionem rectam in ſtellis polo propioribus monuimus.

3) Si tabulae nutationis aſcenſionis rectae in ſtellis zodiacalibus omnibus pariter per 60 annos adhibeantur, quod in tabulis aberrationis aſcenſionis rectae ſine metu erroris c,°5 fieri poſſe vidimus: ſummum, qui in tabulis nutationis naſci poſſit ex variata interim aſcenſione recta, errorem, eſſe circiter 0,°123; ſummum autem, qui ex variata interim declinatione naſci poſſit, errorem in ſtellis, quarum aſcenſio recta = 2ˢ, eſſe 0,°039; in ſtellis vero, quarum aſcenſio recta = 0ˢ, eſſe 0,°077; adeoque ſummum errorem, qui hoc temporis ſpatio in tabulis nutationis oriri poſſit, ſemper eſſe minorem 0,°2. Qui ſi conſpiret cum ſummo errore, qui eodem tempore in tabulas aberrationis aſcenſionis rectae irrepere poteſt, errorum tamen ſumma ſemper minor erit 0,°7, adeoque jure concludimus, tabulas aberrationis ac nutationis rectae in ſtellis zodiacalibus omnibus per 50 aut 60 annos adhiberi omnino poſſe; in ſtellis autem aequatori proximis per duplum fere temporis ſpatium earum uſum permiſſum eſſe apparet. In ſtellis polo propioribus v. c. in iis, quarum declinatio = 80°, patet, variationem ſummam, quae triginta annis naſci poſſit, in tabulis nutationis aſcenſionis rectae eſſe circiter 1°; quae ſi addatur ſummo errori, qui eodem tempore in tabulis aberrationis aſcenſionis rectae oriri poteſt, ſummam efficiet circiter 4°. Quod ſi quis errorem hunc majorem putet, quam qui in ſtellis etiam circumpolaribus admitti poſſit, uſum tabularum minore annorum ſpatio circumſcribere debebit.

4) Poſſe, ſi quis errorem unius minuti ſecundi in nutatione aſcenceenſionis rectae negligi poſſe putet, pro ſtella aliqua ſumi aliam ipſi vicinam intra limites, hac tabula notatos.

Declinat.	0°	10°	20°	30°	40°	50°	60°	70°	80°
Different. aſcenſ. rectae	20°	α)10° β)5	α) 10° β) 6	α) 10° β) 6 γ) 3	α) 7° β) 4 γ) 2	α)6° β)3 γ)1	α)4° β)2 γ)1	α)2° β)1 γ)0	α)1° β)0 30'
Different. declinationis	6°	α)6° β)6 30'	α) 5° β) 6	α) 2° β) 4 γ) 5	α) 1° β) 3 γ) 4	α)0° β)2 30' γ)3	α)0° 45' β)1 30 γ)1 45	α)0° 30' β)0 45 γ)0 54	α)0° 10' β)0 12

Manifeſtum itaque eſt, in ſtellis aequatori vicinis quam plurimas ſtellas, maxime quoad aſcenſionem rectam admodum diverſas, nutationis tabulas easdem admittere, errore ne 1° quidem commiſſo. At cum ſemper earundem ſtellarum etiam aberratio determinari debeat, propter quam, ut ſupra vidimus, ſtellae longe propius a ſe invicem

abeſſe debent, ſi unam pro altera ſumere velis: ſubſiſtendum ſemper erit intra limites arctiores, ſupra pro aberratione praeſcriptos. Tum vero, quae adhuc nutationis diverſitas accedere poteſt ad aberrationis diverſitatem in duabus ſtellis, hac ratione promiſcue habitis, ſemper ita levis erit, ut jure negligi poſſit, et ſtellae determinatio in aſcenſione recta nunquam multo plus 1″ incerta eſſe poterit.

5) Ex tabulis praecedentibus differentias etiam nutationis aſcenſionis rectae peti poſſe, ut in computando aberrationis effectu pag. 111 ſeq. exemplo jam illuſtravimus.

Denique ſi etiam nutationis effectum in declinationem examinemus, erit:

$$d\,\text{nut. decl.} = [8,''415 \cos(\text{AR}* - \Omega\mathbb{C}) + 1,''233 \operatorname{cof}(\text{AR}* - \Omega\mathbb{C})\, d\text{AR}.$$

vel, cum membrum in 1,″233 ductum, ſi $d\,\text{AR} = 1^s$, nunquam ultra 0,″02 aſcendat, adeoque omitti omnino poſſit, erit:

$$d\,\text{nut. decl.} = 8,''415 \operatorname{cof}(\text{AR}* - \Omega\mathbb{C})\, d\,\text{AR}.$$

Hinc ſequens enaſcitur tabula:

Argumentum: AR* − ☊☾			Aequatio	Argumentum: AR* − ☊☾		
+		−		−		+
0ˢ	0°	VIˢ	0,″147	VIˢ	0	XIIˢ
	10		0, 145		20	
	20		0, 138		10	
I	0	VII	0, 127	V	0	XI
	10		0, 112		20	
	20		0, 094		10	
II	0	VIII	0, 073	IV	0	IX
	10		0, 050		20	
	20		0, 025		10	
III	0	IX	0, 000	III	0	IX

Unde patet, ſi variatio nutationis in declinationem maxima ſit, eam tamen aſcenſione recta 1° variata, non fore niſi 0,″147; vel ſi membrum omiſſum addas, non niſi 0,″167. Variatio itaque nutationis in declinationem nunquam ad 1″ aſcendet, niſi variatio aſcenſionis rectae ſit fere 7°. Hinc manifeſtum eſt, tempore, quo tabulas aberrationis in declinationem adhiberi poſſe vidimus, exiguam ſaltim nutationi accidere variationem, propter quam tempus illud vix aliqua ex parte minuendum erit, ne major in declinationem irrepat incertitudo,

ſimulque limites admodum lati, intra quos nutationes ſtellarum vicinarum promiſcue ſumi poſſunt, in oculos incurrunt.

Quod calculi beneficium pag. 85 in ſpecialium aberrationis tabularum uſu indicavimus, idem etiam in nutationum tabulis locum habet; nimirum, fixae ejusdem declinationis, ſed denominationis oppoſitae, quarum aſcenſiones rectae VI ſignis ſunt diſſitae, eandem et ejusdem ſigni algebraici habent nutationis quantitatem, tum in aſcenſione recta, tum in declinatione, ut e. g. in fixis 59 χ Tauri et 20 σ Scorpii tabulae noſtrae pag. 45 et 319 aperte pateſaciunt.

Ne in conficiendis hujus generis calculis aſtronomis practicis quidquam deeſſe pateremur, quod aliunde petere cogerentur, adjunximus ad calcem tabularum noſtrarum ſpecialium pag. 505 — 508 tabulas quatuor, longitudines medias nodi aſcendentis lunae ſecundum tabulas recentiſſimas Cl. *BÜRG*, exhibentes; facile enim ex illis, ſi ephemerides aſtronomicae ad manus non ſunt, vel locum nodi lunae non ſubminiſtrant, argumentum hoc nutationis pro quavis die erui poterit. Tabula I, pag. 505, habet epochas longitudinis mediae nodi; tabula II, pag. 506 et 507, complementum hujus motus medii pro quavis anni die; ideoque motus hic ſemper ad epochas anni dati addendus, ut habeatur locus nodi medius, abunde ad nutationis tabularum uſum ſufficiens, ubi aliquorum minutorum jactura nihil refert. Majoris vero accurationis ſolliciti in tabula IV, invenient motum hunc medium *retrogradum* pro horis et minutis primis, ubi animadvertendum, motum hunc ſemper ſubtrahi debere. Tabula III exhibet motus medios *retrogrados*, in annis Julianis completis ſemper ab epocha praecedente ſubtrahendos, ad epocham ſubſequentem vero addendos, ut habeatur epocha, quam tabula I non ſuppeditat.

Si anni dies dentur ſtilo vetere, ut praeſertim in obſervationibus anglicanis Cl. *FLAMSTEEDII* et Cl. *BRADLEJI* occurrit, ad numerum dierum datum addendae ſunt dies undecim, vel ab epocha longitudinis mediae nodi lunae ſubtrahenda 34′ 57″.

1) Quaeritur e. g. locus medius nodi aſcendentis lunae anno 1680 die 15 Auguſti ſtilo vetere. Erit:

e tab. I	long. med. ☊☾ pro 1700 =	5ˢ	17°	24′	18″
e tab. III	— — — — — 20 = +	0	26	50	20
	ſt. n. 1680 =	6	14	14	38
			—	34	57
	ſt. v. 1680 =	6	13	39	41
	e tab. II 15 Auguſt. =	11	17	58	45
	long. med. ☊☾ ſt. v. =	6ˢ	1°	38′	26″

vel

	ſt. n. 1680 =	6ˢ	14°	14' 38"
e tab. II (15 Aug. + 11) =	26 Aug. =	11	17	23 48
	long. med. ☊☾ ſt. v. =	6ˢ	1°	38' 26"

2) Sit locus nodi lunae ad annum 1751 ſt. v. quaerendus.

e tab. I long. med. ☊☾ pro 1750 =		9ˢ	10°	20' 2"
e tab. III — — — — + 1 =	−	0	19	19 43
ſt. n. 1751 =		8	21	0 19
			—	34 57
ſt. v. 1751 =		8ˢ	20°	25' 22"

3) Quaeritur locus medius ☊☾ 1806 die 9 Maji media hora poſt mediam noctem.

e tab. I long. med. ☊☾ pro 1806 =		9ˢ	7°	14' 16"
e tab. II — — — — 9 Maj. =		11	23	10 7
		9	0	24 23
et tab. IV — — — 12ʰ 30' =				− 1 39
long. med. ☊☾ =		9ˢ	0°	22' 44"

Viſum eſt nuper aſtronomo cuidam, longitudines nodi lunae *veras*, non *medias*, pro nutationis argumento abhibendas eſſe. Sed in hujus naturae calculis vel obiter verſatis conſtat, id minime locum habere, quoniam omnes formulae, aequationes has tradentes, ſemper ad argumenta media, nunquam ad argumenta vera expanduntur.

De ſtellarum inerrantium poſitionibus mediis et apparentibus.

Duplex eſt aſtronomorum recentiorum obſervandi methodus, qua in corporum coeleſtium poſitiones potiſſimum inquirunt. Perductis nunc ad ſummam et incredibilem fere perfectionis gradum horologiis oſcillatoriis, telluris motum diurnum aemulantibus, ſiderum aſcenſiones rectae ex uniformi hac revolutione facile definiuntur. Nam cujuslibet ſideris locus definiendus vel ad ſolem, vel ad ſtellam fixam cognitae poſitionis refertur; quod duplici fieri poteſt modo, vel ex ejus temporis tranſitu per fila teleſcopii circa axem horizontalem in plano meridiani circumvolubili, quod inſtrumentum culminatorium vel tubum meridianum (*Inſtrument de Paſſage*) dicimus; vel ex ejus tranſitu per fila telescopii quadrantis aſtronomici in plano meridiani ad murum affixi, quod organon *quadrantis muralis* nomine nuncupamus.

Ad tubum meridianum recte conſtituendum, ſumma loci ſoliditas, et perpetua inſtrumenti conſtantia requiritur. Nam ſi tubo tali ſiderum appulſus ad meridianum verum definiendus, vel abſoluta temporis aſtronomici menſura determinanda eſt, ſumma ad hoc negotium opus eſt ſubtilitate et accuratione, quam neutiquam aſſequi poteris, niſi tubus ad unguem conſtiterit in plano meridiani. Si qua vero deviatio locum habet, quanta in quovis meridiani puncto ſit, apprime noſſe oportet, ut obſervationes, tubo tali, a meridiani plano deflectente, habitae, per calculum corrigi poſſint. Quotiescunque vero ſolis centrum ad filum meridianum tubi culminatorii, in meridiano probe collocati, pertingit: horologii hora, tunc ſignata, horam meridiei veri indicabit, et hinc indicis horologii aberratio a vera temporis ſolaris menſura mox innoteſcet. Si horologii motus ad tempus primi mobilis (quod etiam *tempus ſidereum* dicimus) procedit: tempus verum, per horologii indices notatum, dum centrum ſolis, vel aliud ſidus quodcunque filum meridianum tubi culminatorii attingit, aſcenſionem rectam veram ſolis, vel ſideris in momento culminationis indicabit. Cognita itaque ſolis, vel fixae, vel ſideris cujuscunque aſcenſione recta ex tabulis aſtronomicis, ſeu fixarum catalogis, ex comparatione cum obſervatione, patebit illico, quantum horologium a data hac vera aſcenſione recta aberret, hoc eſt, quantum horologii indices perperam diſpoſiti a tempore vero ſidereo abſint; unde denique abſoluta temporis

veri

veri determinatio conſequitur. Hinc porro, dato tempore vero, aſcenſio recta ſideris, vel data aſcenſione recta ſolis, haec fixae, et data hujus aſcenſione recta, illa ſolis definiri poterit.

Quodſi autem tubus culminatorius, vel quadrans muralis in ipſo meridiani plano non ſit exactiſſime conſtitutus, dummodo haec deviatio non ſit ultra modum craſſa, ſiderum aſcenſiones rectae absque ullo impedimento ex comparatione cum fixis, quae eandem habent declinationem, poterunt definiri; ſed non temporis veri determinatio, quae vel aliunde petenda, vel cognita inſtrumenti a meridiani plano deviatione, per calculum (de quo mox) elicienda erit.

Ex praedictis quisque intelliget, quanti momenti ſit in praxi aſtronomica, et ſolis motus veros et ſtellarum fixarum poſitiones recte ſtatuere. Ideoque et nobis id ſemper laboris fuit et curae, perfectiorem ſolis theoriam exornare, et ſtellarum inerrantium poſitiones perpolire. Quapropter fixarum obſervationes, praeſertim earum, quae intra zodiacum continentur, a luna obtegi, et arcte cum planetis conjungi poſſunt, in ſpecula ERNESTINA Seebergenſi, ſummo cum ſtudio exegimus ad tubum meridianum octo pedum, opus celeberrimi organopoei *RAMSDENI*, ex omni parte facile abſolutiſſimum, et fundamento immutabili, validiſſimae montis rupi immediate incumbenti, firmatum. Horologium oſcillatorium, quo ad determinandas has fixarum aſcenſiones rectas uſi ſumus, horologiopoei Angliae celebratiſſimi *ARNOLDI* opus eſt perfectiſſimum. Ancorae Grahamianae brachia adamantina applicata ſunt, rotarumque axes in carbunculis volvuntur expolitiſſimis. Inſtructum eſt hoc horologium porro pendulo, virgulis ex zinco et ex chalybe compoſito, caloris et frigoris effectum per ſe corrigente, et ad diurnas fixarum revolutiones temperato; ex qua inſtrumentorum exquiſitiſſimorum tum perfectione, tum firmiſſima poſitione, obſervationum noſtrarum accuratio aeſtimari et judicari poterit.

Quamvis tubus culminatorius, cujus axis ſive per libellam, ſive per filum penduli horizontaliter conſtitutus fuerit, dum revolvitur, maximum ſphaerae circulum deſcribat, non ideo tamen liquet, hunc circulum eum eſſe, quem dicimus *Meridianum*. Examine itaque opus eſt, quo innoteſcat, utrum inſtrumentum recte in meridiani plano conſtitutum ſit, an et quantum ab illo aberret. Ad hoc negotium duplici potiſſimum periclitandi methodo utuntur aſtronomi recentiores.

innoteſcunt. Si $D = L$, tunc erit ſin L — cof L tang D $= o$. In hoc caſu correctio nulla locum habet, quod me non monente liquet, quoniam ſidus per verticem tranſit.

Si $D > L$, erit etiam cof L tang $D >$ ſin L, et correctio mutat ſignum; quod neceſſario evenire debet, quoniam circulus verticalis per tubum deſcriptus, ultra verticem, in oppoſitam meridiani partem abit.

Si $D = 90°$, correctio infinita eſt. Profecto, ſi vel minimae deviationi locus daretur, fixa, quae declinationem 90 graduum haberet, hoc eſt, in ipſo poli puncto conſtituta eſſet, nunquam ſilum meridianum attingeret; imo fixa talis, ſi hoc loco poſita eſſet, pro meta meridiana (*mire méridienne*) haberi poſſet, cujus ope tubi meridiani absque ullo calculo extemplo in veram meridiani directionem adduci poterunt. Fixa, borealem habens declinationem, et ſub polo culminans, poteſt haberi pro fixa, cujus aſcenſio recta $= 180° + R$, et cujus declinatio $= 180° - D$. In hoc caſu erit:

$$n = \text{ſin L} - \text{cof L tang}(180° - D) = \text{ſin L} + \text{cof L tang D.}$$

Pro fixa auſtrali *tang D* ſit negativa, et *n* erit quoque:

$$\text{ſin L} + \text{cof L tang D} = \frac{\text{ſin}(L + D)}{\text{cof D}}.$$

Poteſt nonnunquam evenire, ut inſtrumentum culminatorium ad amuſſim in meridiano, ſed ejus axis non ſit horizontaliter conſtitutus. In hoc ſtatu deviatio maxima ab horizontis plano in vertice locum habet, et aequalis eſt ipſius axis inclinationi. Sit haec inclinatio $= J$, erit correctio culminationum obſervatarum

$$\pm J\ (\text{cof L} \pm \text{ſin L tang D})$$

Signum +, ſi axis ad ortum, ſignum —, ſi ad occaſum inclinatur. Sed probe notandum, obſervationes propter hanc inclinationem erroneas primum corrigendas eſſe, prius quam ad calculum deviationis a meridiano adhibeantur.

Calculus hic breviſſime abſolvitur, ſi in anteceſſum coëfficientes *n* et *m* pro loco dato per omnes declinationis gradus computentur, prout Cl. *DELAMBRE* pro latitudine ſpeculae Pariſinae talem confecit tabulam *). Cum vero ad hoc negotium aſcenſiones rectae XXXVI fixarum Cl. *MASKELYNE* potiſſimum idoneae videantur: condidi in hunc finem tabulam hic appoſitam, quae exhibet coëfficientes $n = \text{ſin L} \mp \text{cof L tang D}$ pro deviatione, et coëfficientes

* Conn. des tems, an 1792, pag. 258.

n = cos L ± sin L tang D pro inclinatione, pro culminationibus ixarum harum praecipuarum, pro latitudine ſpeculae KANNSTI-AE.

Nomina fixarum	Coëfficientes n	Coëfficientes m
γ Pegaſi	+ 0,"618	+ 0,"825
α Arietis	+ 0, 515	+ 0, 952
α Ceti	+ 0, 740	+ 0, 675
Aldebaran	+ 0, 595	+ 0, 854
Capella	+ 0, 129	+ 1, 428
Rigel	+ 0, 870	+ 0, 515
β Tauri	+ 0, 435	+ 1, 070
α Orionis	+ 0, 695	+ 0, 730
Sirius	+ 0, 963	+ 0, 401
Caſtor	+ 0, 378	+ 1, 121
Procyon	+ 0, 713	+ 0, 708
Pollux	+ 0, 434	+ 1, 052
α Hydrae	+ 0, 863	+ 0, 524
Regulus	+ 0, 632	+ 0, 809
β Leonis	+ 0, 599	+ 0, 848
β Virginis	+ 0, 745	+ 0, 669
Spica	+ 0, 889	+ 0, 492
Arcturus	+ 0, 544	+ 0, 916
α Librae	+ 0, 947	+ 0, 419
α Coronae bor.	+ 0, 449	+ 1, 033
α Serpentis	+ 0, 698	+ 0, 726
Antares	+ 1, 083	+ 0, 252
α Herculis	+ 0, 612	+ 0, 833
α Ophiuchi	+ 0, 634	+ 0, 805
Wega	+ 0, 272	+ 1, 250
γ Aquilae	+ 0, 664	+ 0, 769
Atair	+ 0, 684	+ 0, 744
β Aquilae	+ 0, 711	+ 0, 711
α Capricorni	+ 0, 923	+ 0, 449
Deneb	+ 0, 156	+ 0, 613
α Aquarii	+ 0, 791	+ 0, 170
Fomahand	+ 1, 150	+ 0, 826
α Pegaſi	+ 0, 618	+ 1, 043
α Andromedae	+ 0, 442	+ 1, 395
Sub polo		
Capella	+ 1,"424	— 0,"167
Deneb	+ 1, 397	— 0, 135

Exemplum I.

Cum ſub finem anni 1789 tubum culminatorium novum quinque pedum *DOLLONDII*, alteri minori *RAMSDENI* duorum pedum in ſpecula domeſtica arcis ducalis *Friedenſtein* ſubſtituerem,*) et in eo eſſem, ut inſtrumentum ad meridiani planum conſtituerem: peractae ſunt tubo deflectente, ſed ejusdem axe ad libellam diligenter repoſito, die 11 Januarii 1790 obſervationes ſequentes;

Tempus culminationis			*Aldebaran*	4^h	24′	6,″395
—	—	—	*Capellae*	5	1	32, 058
—	—	—	*Rigel*	5	4	36, 725
—	—	—	β *Tauri*	5	13	17, 361

Inquiramus nunc per obſervationes *Capellae* et *Rigel* in inſtrumenti deviationem: calculi typus ita ſe habebit:

AR. appar. *Capellae* per tab. noſtras die 11 Jan. 1790	5^h	1′	15,″018 = T
Ejusdem culminatio obſervata	5	1	32, 058 = t
			− 17,″040 = (T−t)
AR. appar. *Rigel* pro eodem die	5^h	4′	29,″085 = T′
Ejusdem culminatio obſervata	5	4	36, 725 = t′
			− 7,″640 = (T′−t′)
Itaque (T−t) − (T′−t′)			− 9, 400

In Tabula invenies pro *Capella* coëfficientem $n = +0,''129$
— — pro *Rigel* — $n' = +0,870$
$n - n' = -0,''741$

Ergo $x = \frac{-9,''400}{-0,741} = +12,''685$ deviatio ad ortum.

Inde porro:

$h = +0,129 \times +12,''685 = +1,''636$
$h' = +0,870 \times +12,685 = +11,036$

Itaque culmin. obſerv.	*Capellae* = 5^h 1′ 32,″058 . .	*Rigel* = 5^h 4′ 36,″725
correctio	+ 1, 636	+ 11, 036
culminatio vera . .	= 5^h 1′ 33,″694	5^h 4′ 47,″761
AR. appar. calculata .	= 5 1 15, 018	5 4 29, 085
Acceleratio horologii praetempore vero ſidereo	— 18,″676	— 18,″676

Cum eodem die culminationes fixarum α et β Tauri ad eundem tubum obſervatae fuerint: poterunt earundem correctiones illico ſupputari, excerpendo ſcilicet e tabula coëfficientes *n* reſpondentes, et multiplicando easdem per deviationem horizontalem. Habemus itaque

pro α Tauri = $0,595 \times +12,''685 = +7,''548$
pro β Tauri = $0,435 \times +12,685 = +5,518$

*) Tab. motuum ſolis. Gothae 1792; in introductione pag. 126.

Adeoque

Culmin. obſervata α Tauri =	$4^h\ 24'\ 6,''395$ . .	β Tauri = $5^h\ 13'\ 17,''361$
Correctio	+ 7, 548	+ 5, 5 8
Culminatio vera	$4^h\ 24'\ 13,''943$	$5^h\ 13'\ 22,''879$
AR. appar. calculata . . .	4 23 55, 300	5 13 4, 176
Acceleratio horologii, ut ſupra	− 18,″643	− 18,″703

Qui vero tabulas tales pro coëfficientibus n et m paratas non habent, poterunt deviationem z per concinnam hanc formulam

$$\frac{(T-t)-(T'-t')\cos D\cos D'}{\cos L\sin(D-D')}$$

ſupputare, qua inventa culminationum correctiones erunt:

pro prima fixa $= \frac{z\sin(L-D)}{\cos D}$; pro ſecunda $= \frac{z\sin(L-D')}{\cos D'}$.

In exemplo ſupra allato habemus $(T-t)-(T'-t') = -9,''400$

D =	45° 45′ 54,″0 bor.	D' =	8° 27′ 29,″0 auſtr.
L =	50 56 8, 0	$(D-D')$ =	54 13 23, 0
$(L-D)$ =	5 10 14, 0	$(L-D')$ =	59 23 37, 0

Adeoque

Log. 9,″400 =	0,9731279
Log. cof D =	9,8436083
Log. cof D′ =	9,9952507
C. A. Log. cof L =	0,2005257
C. A. Log. ſin (D—D′) =	0,0908190
Log. z =	1,1033316 = + 12,″686 deviatio ut ſupra.

Culminationum correctiones erunt:

Pro *Capella.*		Pro *Rigel.*	
Log. z = 12,″686 =	1,1033316	. . . . .	1,1033316
Log. ſin (L − D) =	8.9548249	Log. ſin (L − D′) =	9,9348444
C. A. Log. cof D =	0,1563917	C. A. Log. cof D′ =	0,0047493
	0,2145482		1,0429253
	+ 1,″639		+ 11,″039 prorſus ut ſupra.

In calculo praecedente nulla motus horologii habita eſt ratio, quia in hoc caſu nulla erat. Si autem, quod plerumque accidit, motus hic diurnus horologii revera ſit, ſive acceleratus, ſive retardatus: in computum primum vocandus eſt, priusquam deviationis calculum iniveris. Sit e. g. retardatio horologii in 24 horis $= r$; erit aequatio ad momentum obſervatum unius fixae applicanda $= -\frac{(T-T')r}{24^h}$.

Si loco duarum ſtellarum unica ſolum circumpolaris ſupra et infra polum obſervatur, formula generalis in hanc abit ſimpliciorem. Nam ſit R revolutio diurna fixarum, et $T' = T + \frac{1}{2}R$, et hinc

$$z = \frac{T-t-T'+t'}{n-n'} = \frac{T-t-T-\frac{1}{2}R+t'}{n-n'} = \frac{-t-\frac{1}{2}R+t'}{n-n'} =$$

$$= \frac{\frac{1}{2}R+t-t'}{n'-n} = \frac{\frac{1}{2}R+t-t'}{(\sin L \pm \cos L \operatorname{tang} D) - (\sin L \mp \cos L \operatorname{tang} D)} =$$

$$= \frac{\frac{1}{2}R+t-t'}{\pm 2 \cos L \operatorname{tang} D}.$$

Signum +, ſi culminatio primum ſupra aequatorem obſervata fuerit, ſignum —, ſi infra.

In genere, ſi horologii motus non perpendatur, erit

$$z = \frac{(T-t)-(T'-t')}{\cos L\,(\operatorname{tang}\delta - \operatorname{tang} D)} = \frac{(T-t)-(T'-t')}{\cos. L} \times \frac{\cos\delta \cos D}{\sin(\delta - D)}.$$

Exempli gratia: eodem die quo ſupra, 11 Januarii 1790, obſervata eſt culminatio *Capellae* ſub polo $17^h\ 1'\ 15,''631$. Erit itaque

Culminatio *Capellae* ſupra polum	$= t =$	5^h	$1'\ 32,''058$
$+ \frac{1}{2}$ R.	$+$	12	
$\frac{1}{2}$ R $+ t$		17^h	$1'\ 32,''058$
Culminatio *Capellae* infra polum	$= t' =$	17	1 15, 631
$\frac{1}{2}$ R $+ t - t'$	$+$		$16,''427$

Per tabulam eſt $n = + 0{,}129$

— — $n' = + 1{,}424$

$(n'-n) = + 1{,}295$

Ergo deviatio orientalis $z = \frac{+ 16,''427}{+ 1,295} = + 12,''685$ ut ſupra.

Vel per formulam generalem:

$$z = \frac{\frac{1}{2}R+t-t'}{\cos L} \overline{\cos D^2}$$

Log. $\frac{1}{2}$ R $+ t - t'$	$= 16,''427 =$	1,2155583
Log. $\overline{\cos D^2}$	$=$	9,6872166
C.A. Log. cos L	$=$	0,2005257
Log. z	$= 1{,}1033006 =$	$+ 12,''685$, eadem deviatio, quae ſupra.

Haec poſterior methodus priori hactenus eſt praeferenda, quod a ſola pendet obſervatione, et nullis eget ſiderum poſitionibus, ſed contra praeſupponit, inſtrumentum et horologium per duodecim horarum intervallum nullam pati variationem, de qua re difficile eſt vadimonium praeſtare. Methodus vero prior non ideo ſolum praeferenda eſt, quia non ab abſoluta aſcenſione recta fixarum, ſed ab illarum tantummodo differentia pendet, quam ex recentioribus catalogis

gis noſtris maxima cum certitudine aſſumere licet, verum etiam, quod in pauculorum minutorum intervallo poſitio inſtrumenti explorari poteſt, obſervando ſcilicet duarum fixarum tranſitus parum in aſcenſione recta et plurimum in declinatione diſſitarum, quales v. g. ſunt fixae *Capella* et *Rigel*; vel *Capella ſub polo* et *α Herculis*; *α Capricorni* et *α Cygni*; *Fomahand* et *α Pegaſi* vel *α Andromedae* etc.

Exemplum II.

Anno 1790 die 12 Januarii habitae ſunt in ſpecula aſtronomica *Erneſtina* obſervationes ad tubum culminatorium, qui nec in plano horizontis, nec in plano meridiani conſtitutus erat. Axis inſtrumenti 4,″5 inclinatus erat, et fixarum culminationes ad horologium, ad tempus ſidereum exacte ordinatum, ſequentes inveniebantur

Culminatio *Capellae* = 5^h 1′ 18,″219
Rigel = 5 4 9, 652

Correctiones itaque propter inſtrumentum inclinatum erunt:

pro *Capella* m J = 1,428 × 4,″5 = 6,″426
pro *Rigel* m′J = 0,515 × 4, 5 = 2,″318

Adeoque

Culmin. *Capellae* obſerv.	=	5^h 1′ 18,″219	*Ri*		^{h} 4′	9,″652
Correctio pro inclinatione	=	— 6, 426	. . .		—	2, 318
Culminatio vera		5^h 1′ 11,″793 = t	. . .		5^h 4′	7,″334 = t′
ΔR. appar. calculata		5 1 14, 993 = T	. . .		5 4	29, 068 = T′
(T − t)	=	+ 3,″200	(T′ − t′)	=	+	21,″734
			(T − t)	=	+	3, 200
			(T′ − t′) − (T − t)	=	+	18,″534

Ex tabula pro *Capella* n = + 0,129
— — — *Rigel* n′ = + 0,870
(n — n′) = + 0,741

Ergo deviatio $z = \frac{+ 18,″534}{+ 0,741} = +$ 25,″012 ad ortum.

Si duarum fixarum loco, unica tantummodo circumpolari ſupra et infra polum culminante utamur, calculus ſequenti abſolvitur modo. Eodem die et loco, quo ſupra, culminatio *Capellae* infra polum obſervata eſt: 17^h 0′ 38,″650, vel demta ſemi-revolutione fixarum $\frac{1}{2}$ R = 5^h 0′ 38,″650. Erit itaque correctio pro axis inclinatione:

pro culminatione infra polum = m′J = — 0,167 × 4,″5 = 0,″752.

Hinc calculus pro deviatione z:

Culm. *Capellae* ſupra polum $= 5^h\ 1'\ 18,''219$ infra polum $= 17^h\ 0'\ 38,''650$
Correctio . . . . . $-\ 6,426$ . . . . . $+\ .\ .\ 0,752$
Culminatio vera $= t + \frac{1}{2}R\ 17^h\ 1'\ 11,''793$ . . . . . $17^h\ 0'\ 39,''402 = t'$
— — — t' . . . $17\ 0\ 39,402$
$\frac{1}{2}R + t - t'$ . . $+\ 32,''391$

Per tabulam eſt $n = +\ 0,129$
— — — $n' = +\ 1,424$
$(n - n') = +\ 1,295$

Itaque deviatio orientalis $z = \frac{+\ 32,''391}{+\ 1,295} = +\ 25,''013$ ut ſupra.

Accidit nonnunquam, ut inclinatio axis per cochleam micrometricam libellae metiri non poſſit, ſed ex ipſis primum obſervationibus derivanda ſit. Poterit tunc inclinatio haec ex culminatione *cujusdam* fixae in ipſo vertice, vel ex culminatione duarum fixarum, altitudine diſſitarum, per ſequentes explorari formulas.

Sit $(T' - t')$ tang $D = \alpha$ et $(T - t)$ tang $D' = \beta$.

Erit 1) $\frac{\alpha - \beta}{(T' - t') - (T - t)} = \text{tang}\ \lambda$

Fiat 2) $\psi = (L - \lambda)$

Erit inclinatio

$$3)\ \frac{(T' - t') - (T - t)}{\text{coſ}\ \lambda\ (\text{tang}\ D - \text{tang}\ D')} \times \text{ſin}\ \psi = J$$

Eadem haec formula praebet quoque deviationem inſtrumenti, ponendo tantummodo *coſ.* ψ loco *ſin.* ψ. Erit enim deviatio

$$4)\ \frac{(T' - t') - (T - t)}{\text{coſ}\ \lambda\ (\text{tang}\ D - \text{tang}\ D')} \times \text{coſ}\ \psi = z$$

Formulae hae ſupponunt utrasque declinationes boreales; ſi una vero auſtralis eſt, ipſius tangens negativa ſumenda, et ſignum membri, in quo declinatio haec auſtralis occurrit, mutandum eſt. Signa algebraica, quae quantitatibus J et z remanent, indicant, in quamnam partem vergant *inclinatio* et *deviatio*. Valores poſitivi denotant, axem orientalem inſtrumenti ſupra horizontis planum attolli, et ad ortum deflectere; contra vero valores negativi, axem occidentalem ſupra horizontem aſſurgere, et inſtrumentum ad occaſum deviare.

Exemplum III.

Ponamus, in exemplo ſupra allato pag. 153 inclinationem ibidem datam non eſſe cognitam; poterit per formulas traditas ſequenti modo ſupputari.

Culmin. obſerv. *Capellae*	$= 5^h\ 1'\ 18,''219 = t$	*Rigel*	$= 5^h\ 4'\ 9,''652 = t'$
AR. appar. calculata	$5\ 1\ 14,993 = T$		$5\ 4\ 29,068 = T'$
	$(T-t) = -\ 3,''226$		$(T'-t') = +\ 19,''416$
			$(T-t) = -\ 3,226$
			$(T'-t') - (T-t) = +\ 22,''642$

Declinatio *Capellae* $= D = 45°\ 45'\ 54,''0$ bor.
— — *Rigel* $= D' = 8\ 27\ 29,0$ auſtr.

$\text{Log.}(T'-t') = +19,''416$	$= 1,2881598$	$\text{Log.}(T-t) = -\ 3,''226$	$= 0,5086644-$
$\text{Log. tang. } D \ldots\ldots$	$= 0,0115986$	$\text{Log. tang. } D' \ldots$	$= 9,1723187-$
$\text{Log. } \alpha \ldots\ldots$	$= 1,2997584$	$\text{Log. } \beta \ldots\ldots$	$= 9,6809831$
$\alpha = +\ 19,''942$		$\beta = +\ 0,''480$	
$\beta = +\ 0,480$			
$\alpha - \beta = +\ 19,''462$			

$\text{Log. } \alpha - \beta = +\ 19,''462 = 1,2891875$
$\text{Log. } (T'-t') - (T-t) = +\ 22,642 = 1,3549148$

$\text{Log. tang. } \lambda = 9,9342727 = 40°\ 40'\ 50,''9 = \lambda$
$50\ 56\ 8 = L$
$10°\ 15'\ 17,''1 = \psi$

$\text{Tang. } D = +\ 1,027$
$\text{Tang. } D' = -\ 0,149$

$\text{Tang } D - \text{tang } D' = +\ 1,176$	Log.	$=$	$0,0704073$
	$\text{Log. cof. } \lambda$	$=$	$9,8798713$
			$9,9502786$
	Compl. arithm.	$=$	$0,0497214$
$\text{Log.}(T'-t')-(T-t) = +\ 22,''642$		$=$	$1,3549148$
			$1,4046362$
	$\text{Log. ſin } \psi$	$=$	$9,2504813$
	$\text{Log. } J$	$=$	$0,6551175$
	Inclinatio J	$= +\ 4,''520$	

$\ldots\ldots\ 1,4046362$
$\text{Log. cof. } \psi = 9,9930066$
$\text{Log. } z = 1,3976428$
Deviatio $z = +\ 24,''983$

Si ejusdem ſtellae circumpolaris culminatio ſupra et infra polum obſervatur, formulae ſimpliciorem induunt formam. Erunt ſcilicet:

1) $\text{Tang. } \lambda = \dfrac{(T-t) - \frac{1}{5}(t'-t)}{\frac{4}{5}(t'-t)}\ \text{tang. } D$

2) $\psi = (L-\lambda)$

3) $J = \dfrac{\frac{1}{2}(t'-t)}{\text{cof } \lambda}\ \text{cotang } D\ \text{ſin } \psi$

4) $z = \dfrac{\frac{1}{2}(t'-t)}{\text{cof } \lambda}\ \text{cotang } D\ \text{cof } \psi.$

In exemplo ſupra pag. 153 erat culminatio *Capellae* ſupra polum $5^h\ 1'\ 18,''219 = t$, infra polum $17^h\ 0'\ 38,''650 = t'$, aſcenſio recta apparens calculata $5^h\ 1'\ 14,''993$.

Culmin. *Capellae* ſupra pol.	= 5h	1′	18.″219 = t	infra pol. = 5h	0′	38.″650 = t′
AR. appar. calculata . . .	= 5	1	14. 993 = T	 5	1	18. 219 = t
(T − t)	=	−	3.″226	(t′ − t)	=	−	39. 569
				½ (t′ − t)	=	−	19. 785
				(T − t)	=	−	3. 226
				(T − t) − ½ (t′ − t)	=	−	16.″559

Log. (T − t) − ½ (t′ − t) = − 16.″559 = 1,2190341
Log. tang. D . . . . . = 0,0115986
1,2306327
Log. ½ (t′ − t) = − 19.″785 . . . = 1,2963361
Log. tang. λ . . . . . = 9,9342966 = 40° 40′ 56.″5 = λ
50 56 8 = L
10° 15′ 11.″5 = ψ

Log. ½ (t′ − t) = − 19.″785 = 1,2963361
Log. cotang D . . . . = 9,9884014
Log. C. A. cof. λ . . . = 0,1201389
1,4048764 1,4048764
Log. ſin ψ = 9,2504161 Log. cof. ψ = 9,9930087
Log. J = 0,6552925 Log. z = 1,3978851

Inclinatio J = + 4.″522 Deviatio orientalis z = + 24.″997.

Stellarum poſitiones recentiores tam exquiſita jam gaudent accuratione, ut methodum, nunc traditae affinem, ad majorem quam ad triginta ſex fixarum numerum extendere, et in uſum *inveſtigandae* deviationis tubi culminatorii, tum commodiorem, tum generaliorem adhibere poſſimus.

Cum, ut ſupra oſtendimus, in determinanda talis inſtrumenti deviatione a plano meridiani, tantummodo neceſſe ſit, *differentiam*, non *ipſas* aſcenſiones rectas *apparentes* fixarum obſervatarum noſſe; poteſt illa compendio breviori inveniri, ſi ad hunc finem eligantur ſtellae ejusdem declinationis, ſed denominationis oppoſitae, hoc eſt, una borealis, auſtralis altera, quarum tamen aſcenſiones rectae parum inter ſe diſſident. In hoc caſu, ut pag. 85 et 142 jam ſignificavimus, aberrationis et nutationis quantitates prorſus eaedem ſunt, adeoque differentiae horum effectuum plane evaneſcunt, eorumque calculus omnino praeteriri, atque differentia *media* tuto et ſemper pro *apparenti* haberi poteſt. Congeſſimus ad hunc ſcopum pag. XXV ex catalogo majori Cl. *PIAZZI* ſtellarum quarumdam poſitiones medias proprietate hac gaudentes, hoc eſt, ejusdem prope declinationis, denominationis oppoſitae, ejusdemque fere aſcenſionis rectae. Sed ſi in fixarum harum delectu legi huic non adeo ſcrupuloſe adhaeſimus, et tum in aſcenſione recta, tum in declinatione, majorem, quam par eſſe videtur, admiſimus differentiam, id de induſtria factum eſt, tum ut majorem ſtellarum hujus naturae nanciſceremur numerum, tum

quia nobis perſpectum erat, errores, qui exinde oriri poſſunt, rariſſime imo vero nunquam ultra o,"2 minuti ſecundi temporis aſſurgere. At quisnam, quaeſo, aſtronomorum de hac quantitate tum in obſervatione, tum in aſcenſione recta ſtellae adhibitae vadimonium faciet? Ad confirmandam hanc aſſertionem faciamus periculum in exemplo minime favente, et ſit ſupputanda differentia aſcenſionum rectarum tum mediarum, tum apparentium fixarum α Leporis et ζ Tauri, quarum declinationes, auſtralis una, borealis altera 3 gradibus differunt. Erit ſecundum catalogum pag. XXV relatum:

AR. med. pro 7 Sept. 1800	α Leporis	= 5h 23' 56,"194	ζ Tauri	= 5h 25' 43,"848
Aberratio		= — 0, 166	. . . . .	0, 179
Nutatio		= — 0, 459	. . . . .	0, 474
AR. appar. pro 7 Sept. 1800 . . .		= 5h 23' 55,"569	. . . .	5h 25' 43,"195

Differ. AR. app. = 1' 47,"626

Omiſſis vero nunc aberrationum et nutationum effectibus, *differentia* haec *media* foret = 1' 47,"654, itaque ab *apparenti* vix diverſa.

Ad tubi meridiani veram poſitionem et rectificationem plura minutiſſima animadvertenda eſſe, donec ad obſervationes inſtituendas ex omni parte idoneum reddatur inſtrumentum, neminem aſtronomorum fugit.

Inter haec praecipuum locum tenet inquiſitio, utrum axis opticus teleſcopii, ſeu *linea collimationis*, hoc eſt, linea, quae jungit lentium centra cum centro filorum, normalis ſit axi revolutionis totius inſtrumenti, nec ne. Expoſui fuſius in *tabulis* meis *ſolaribus* anno 1792 editis pag. 132 methodos varias, quibus *error* hic *collimationis* inveſtigandus, ac proinde corrigendus eſſet; ſed poteſt nonnunquam evenire, ut error iſte aut corrigi non queat, aut ſponte et obſervatore non advertente irrepat. Obſervationes inſtrumento, hoc vitio laborante, inſtitutae, neceſſario correctione quadam egent. Contigit e. g. mutatio talis ſpontanea *lineae fiduciae* tubi meridiani ſpeculae Grenovicenſis *) anno 1768, in quo Cl. *MASKELYNE* errorem hunc, omnino ignorans, quo caſu ortus eſſet, inopinate deprehenderat, qui quidem per menſes duos et ultra conſtiterat, in quo temporis intervallo plurimae tubo hoc peractae fuerant obſervationes. Erroris quantitatem invenit primum methodo ſolita, dirigendo nempe teleſcopium ad metam meridianam. Convertendo dein axem

*) Aſtronomical Obſervations made at the royal obſerv. at Greenwich by *N. Maskelyne*. Vol. I. London MDCCLXXVI, pag. 135.

inſtrumenti reperit, metam hanc per filum meridianum non obtegi, imo 62″ ab illa ad occaſum dupla ſua aberratione diſtare, unde collimationis errorem colligit = 31″. Eundem per obſervationes aſtronomicas, inprimis ſtellae polaris eadem methodo, quam in tabulis ſolaribus pag. 134 explicavimus, indagavit, et ſumto ex compluribus obſervationibus medio arithmetico, eum tandem 30″, ſeu in tempore 2″ ſtabilivit. Hinc omnia tempora tranſituum ſtellarum a 24 menſis Auguſti ad 4 Novembris usque, hoc tubo obſervata (per quod temporis intervallum error hic ſubſtitit) per ſequentes emendanda veniunt correctiones.

2″ ſec decl. * × ſin verſ. alt. *, ſi culminatio in quadrante auſtrali circuli meridiani, et 2″ ſec decl. * × ſin verſ. diſt. a vert. +90°, ſi in quadrante boreali locum habet.

De fixarum catalogo.

Cum primum mihi conficiendi fixarum catalogi voluntas exſtiterit, ante omnia recenſionem catalogi Flamſteediani ſtellarum *zodiacalium* ſuſcipere animus fuit, tum quia ſtellae hae in praxi aſtronomica uſu quam plurimo invaluerunt, quia cum luna et cum planetis ſaepiſſime congrediuntur, et determinandis illorum poſitionibus geocentricis inſerviunt; tum quod illarum ope, et propter earumdem motus diurnos incitatiores, temporis veri determinatio per tubos meridianos quam exactiſſime perfici et obtineri poteſt.

Optimam igitur in hunc finem viam me initurum exiſtimabam, ſi accuratiſſimum Cl. *MASKELYNE* XXXVI fixarum catalogum pro fundamento et baſi totius operis aſſumerem, ac proinde fixarum mearum obſervationes cum iisdem conferrem, et inde aſcenſiones rectas meas definirem. Rationem hanc jam abhinc annos viginti ſecutus ſum, quaque catalogus meus 345 fixarum anno 1792 editus *) confectus eſt, eandem rationem eo fidentius ſervare conſultum duximus, quo majore in catalogi ſui perfectione et perpolitione celeberrimus hic Angliae aſtronomus deſudaverat ſtudio.

Primum hunc XXXVI fixarum catalogum exhibuit Cl. *MASKELYNE* ad annum 1770 in tabulis ſuis aſtronomicis anno 1774 Lon-

*) Fixarum praecipuarum catalogus novus, ex obſervationibus in obſervatorio Gothano habitis, ad initium anni MDCCC conſtructus. Gothae, 1792.

dini editis.*) Eundem iterum perfecit anno 1790, quem Cl. *WOLLASTON* in limine compilationis omnium, qui exstant, fixarum catalogorum**) vulgaverat. Haec erant puncta et prototypi, quibus ascensiones rectae nostrae ex propriis observationibus deductae superstruebantur, et omnis catalogus noster zodiacalis confectus est. Cum rursus denique clarissimus auctor catalogum hunc fundamentalem anno 1802 iterato exornavisset studio, ex repetitis observationibus et calculis invenit, absolutam ascensionem rectam α Aquilae huc usque stabilitam, in qua omnis catalogus innititur, et proinde ascensiones rectas omnium XXXVI fixarum, justo minores inveniri, adeoque quantitate 3,"8 augendas, et ascensionem rectam α Aquilae ad initium anni 1802 statuendam esse $19^h\ 41'\ 7,"13$ ***). Correctio haec a clarissimo auctore propositа summam omnium astronomorum excitavit attentionem. Nonnullis scrupulus injectus est, utrum correctio haec non dubitanter admittenda, an potius exspectandum esset, donec disceptatio in causa tam gravi aliorum observationibus foret illustrata, vel repetito rigorosissimo examine comprobata. Nam admissa hac correctione, necessario et omnium planetarum longitudinis mediae epochae motusque earum medii immutari debent. Exspectantes spes non fefellit. Nam ex observationibus recentissimis Cl. *PIAZZI* in *Ephemeridibus astronomicis Vindobonensibus*, ad annum 1806 pag. 336 et 383 relatis, prodit, correctionem hanc, a clarissimo Angliae astronomo regio recognitam, non solum admittendam, sed etiam augendam esse. Nam celeberrimus hic astronomus Panormitanus ascensionem rectam absolutam hujus fixae ex propriis observationibus ad principium anni 1802 reductam invenit $19^h\ 41'\ 7,"236$. Idem aliarum quarumdam fixarum ascensiones rectas absolutas tentare conatus est; sed observationes suas hus usque factas pro satis tutis non habet. Sperat, easdem de novo aggredi et persequi, donec earumdem amplam satis nactus fuerit copiam. Dedit interea speciminis loco quasdam ascensiones rectas, ex absolutis observationibus erutas, quae cum recentissimo catalogo anglicano non omnes plane conveniunt, ut tabula annexa ob oculos ponit. Ascensiones rectae a Cl. *PIAZZI* observatae ad diem 22 De-

*) Tables for computing the apparent places etc. By *N. Maskelyne*. London 1774.

**) A specimen of a general astronomical catalogue etc. adapted to Jan. 1. 1790 etc. By *Fr. Wollaston*. London 1789 Vol. I.

***) Monatl. Corresp. VIII B. pag. 96.

cembris reductae erant; nos easdem, cum variatione annua et motu proprio Maskelyniano, ad initium anni 1802 traduximus.

Nomina ſtellarum	Aſcenſio recta media 1802 ſec. *Piazzi*	Differentia cum catalogo *Maskelyne* 1802
Sirius	$6^h\ 36'\ 25,''173$	+ 0,″277
Caſtor	7 21 56, 504	+ 0, 006
Procyon	7 28 55, 785	— 0, 185
Pollux	7 33 10, 658	+ 0, 022
Wega	18 30 13, 957	+ 0, 013
γ Aquilae	19 36 50, 611	— 0, 081
Atair	19 41 7, 241	— 0, 111
Deneb	20 34 41, 014	— 0, 104
α Aquarii	21 55 36, 460	— 0, 030
Fomahand	22 46 40, 734	+ 0, 076
α Pegaſi	22 54 54, 221	+ 0, 009

Maluit Cl. *BÜRG* in re tanta tentare omnia, quam in auctoritate, quantumvis magna, acquieſcere. Selegit hunc in finem obſervationes Grenovicenſes annorum 1796, 1797 et 1798, tum quia ad manus eſſent, tum quoniam veriſimile illi videbatur, aſcenſionem rectam α Aquilae a Cl. *MASKELYNE* in medium allatam, jam ex obſervationibus annis 1800, 1801 et 1802 depromtam fuiſſe. Deduxit inde methodo, in *Ephemer. aſtronom. Vindobon.* ad annum 1806 pag. 139 luculenter expoſita, aſcenſionem rectam hujus fixae ex obſervationibus circa aequinoctia duo conſequentia, id eſt vernum et autumnale, pro initio anni 1802 = $19^h\,41'\ 7,''231$, quae determinationi Cl. *PIAZZI* ad unguem aſſentit, et a determinatione Cl. *MASKELYNE* 0,″105 temporis diſcrepat.

Exhibemus hic infra ſtellarum harum XXXVI aſcenſiones rectas medias ad annum 1802, prout ab ipſo clariſſimo aſtronomo Grenovicenſi in diario obſervationum ſuarum vulgatae ſunt, additis tantummodo differentiis cum ejusdem catalogis annorum 1770 et 1790, ſignis praefixis in aſcenſionem rectam exhibitam adhibendis. Quibus vero determinatio Cl. *PIAZZI*, calculis Cl. *BÜRG* comprobata, magis arridet, augeant, ſi placet, decima unius minuti ſecundi parte aſcenſiones rectas cunctas ibidem relatas, et habebunt fixarum harum poſitiones medias ad mentem clariſſimorum horum virorum.

Cum in determinandis aſcenſionibus rectis noſtris ſemper catalogo hoc *MASKELYNIANO* anni 1790 uſi ſimus ad dignoſcendam horo-

horologii deviationem a tempore vero ſidereo, qua data, aſcenſiones rectae quoque ſtellarum omnium hac die tubo meridiano obſervatarum innotuerant, et cum in hunc finem ſemper, quantum fieri potuit, omnes harum XXXVI ſtellarum obſervatae fuerint culminationes: error medius, qui ex noviſſimo catalogo anni 1802 in fixarum noſtrarum determinationes redundare poteſt, quam proxime idem erit, qui ex media differentia catalogorum annorum 1790 et 1802 prodit, et qui ſumto hoc medio arithmetico invenietur + 0,"1723. Sed cum ſecundum obſervationes et disquiſitiones clariſſimorum virorum *PIAZZI* et *BÜRG* differentia haec media ſit + 0,"2758 in tempore, ſeu + 4,"137 in arcu: omnes aſcenſiones rectas noſtras, per catalogum hunc anni 1790 expletas, eadem hac auximus quantitate. Enimvero cum diu ante correctionis recognitionem praecipuarum quarumdam fixarum aſcenſiones rectae noſtrae in fronte tabularum noſtrarum ſpecialium aberrationis et nutationis prelo jam excuſae, et a Cl. *DE LA LANDE* in *Ephemer. aſtronom. Pariſinis* ad annum VIII pag. 396 denuo recuſae eſſent: correctionem hanc, modo indicatam, continere haud potuerunt. Mirandum itaque non erit, easdem a praeſenti catalogo traditis hac quantitate diſcrepare. Cum porro ſpecula Erneſtina Seebergenſis nec quadrante murali, nec ſectore zenithali, nec circulo meridiano, vel hujus generis inſtrumentis magni radii inſtructa eſſet, quibus fixarum declinationes eadem accuratione, qua aſcenſiones rectas determinare, et aliorum aſtronomorum conatus aemulari licuiſſet, abſtinendum potius ab hoc incepto duximus, quam minorum radiorum organis quidquam tentare improbe. Jam conſtabat mihi, clariſſimos viros, *BARRY* et *HENRY*, in ſpecula electorali Mannhemienſi obſervandis declinationibus fixarum zodiacalium, catalogo britannico *FLAMSTEEDII* exhibitarum, ſummam dare operam, eamque callidiſſime perfici, cum ſpecula haec, quadrante murali inſigniori *BIRDIANO* octo pedum et ſectore zenithali *SISSONIANO* novem pedum munita ſit. Quocirca declinationes has cum aſcenſionibus rectis noſtris jungere animus erat. Quod cum Cl. *BARRY* propoſuiſſem: perhumaniter excepit conditionem oblatam, comiterque ac benigne declinationes ſuas nobiscum communicavit, quas cum aſcenſionibus rectis noſtris hic ſiſtimus.

Monendum reſtat, clariſſimos viros, *BARRY* et *HENRY*, in reducendis ſuis obſervationibus latitudine ſpeculae Mannhemienſis 49° 29' 13", et refractione Bradlejana ex tabulis aſtronomicis Cl. *DE LA LANDE* (editionis 1792) uſos fuiſſe. Quod latitudinem attinet, dubitante ipſo Cl. *BARRY* *), errorem ſuſpicari licet,

qui ad quatuor vel quinque minuta ſecunda aſſurgere poteſt. Si recentioribus fidendum eſt obſervationibus, latitudo haec foret 49° 29′ 18″, prout in tabulis noſtris ſolis poſtremis excepimus.

Ne de reductionis modo in dubio haereret lector, malui hic calculi paradigma inſerere, quod clariſſimus auctor ipſe ad nos transmiſerat, ex quo methodum adhibitam penitus perſpicere licet.

Anno 1793 diſtantia a vertice apparens obſervata β Tauri ex compluribus obſervationibus media . . . . . 21° 3′ 36,″3

Medium { erroris collimationis quadrantis muralis . + 18, 5
Medium { refractionis verae . . . . . + 22, 0

Diſtantia a vertice correcta . . . . . 21° 4′ 16,″8
Latitudo ſpeculae 49 29 13, 0
Declinatio apparens . . . . . 28° 24′ 56,″2

Medium { variationum . . . . . — 0, 64
Medium { aberrationum . . . . . — 2, 37
Medium { nutationum . . . . . + 8, 80

Declinatio media pro initio anni 1793 . . . . . 28° 25′ 1,″99

Ut judicium de declinationum harum praeſtantia ferri poſſet, comparavimus easdem cum recentiſſimis Cl. *PIAZZI*, quae in ejusdem catalogo noviſſimo nunquam ſatis laudando habentur, ex quarum differentiis appoſitis pateſcet, quanam gaudeant accurationis nota.

Ne quid deſit, addimus tabulam declinationum mediarum XXXVI fixarum ſecundum Cl. *MASKELYNE*; easdemque ad mentem Cl. *BÜRG***) pro refractione caſtigatas, una cum illis Cl. *PIAZZI*, ſi differentias ſcilicet juxta poſitas, pro ſignis ſuis ad declinationes ibidem exhibitas, applicueris.

Ut omnia, quae ad definienda *media* vel *apparentia* fixarum loca requiruntur, praeſto eſſent, adjecimus ſecundum elementa noviſſima in operis hujus decurſu diſceptata, XXXVI fixarum celebratiſſimarum aberrationum et nutationum tabulas ſpeciales in aſcenſionem rectam et in tempore, ita quidem in calculatoris commodum diſpoſitas, ut quantitates ſemper exhibeant additivas; qua, propter tum ab aberratione, tum ab nutatione, calculo peracto 2″, vel ſimul et ſemper 4″ rejicienda ſunt. In aberrationum vero et nutationum tabulis in declinationem a quavis 20″, vel ſimul et ſemper 40″ ſubtrahenda

*) Monatl. Correſp. VIII B. pag. 345; IX B. pag. 284.

**) Ephemer. aſtronom. Vindob. ad annum 1806, pag. 331.

veniunt, ut calculi paradigmata mox infra referenda clarius oſtendent.

Stellae polaris poſitionem dedimus jam ampliſſimam pag. 76 hujus operis ab anno 1790 ad annum 1820. Sed cum in hoc temporis intervallo effectus aberrationis et nutationis in aſcenſionem rectam hujus fixae propere mutentur: libuit tabulas peculiares addere, in quibus quantitates hae pro quovis decennio ab ovo ſupputatae habentur.

De catalogi noſtri diſpoſitione id monuiſſe juvabit, nos ſtrictim in fixarum enumeratione numeros Flamſteedianos, ſecundum ejusdem auctoris *hiſtoriam coeleſtem britannicam* Vol. III, ſecutos fuiſſe. Cum vero in conficiendo hoc celeberrimo catalogo plures irrepſiſſent tum obſervatoris hallucinationes, tum calculi lapſus: hos in recenſione peculiari exponi et emendari in votis eſt.

Variationes fixarum annuae, tum in aſcenſione recta, tum in declinatione appoſitae, ſecundum noſtram praeceſſionis aequinoctiorum disquiſitionem ſupputatae ſunt. Ut vero calculatorum commodo ex omni parte conſuleretur, conſtructae et ad calcem hujus catalogi adjectae ſunt tabulae variae, quarum ope ſtellarum errantium et inerrantium poſitiones ſive apparentes ſive verae calculo facillimo ſubmitti poſſunt; quod ex tabularum columnarumque inſcriptionibus, et ex calculi typis mox exponendis fuſius eluceſcet.

Tabulae aberrationis et nutationis pro XXXVI fixarum aſcenſionibus rectis Cl. MASKELYNE.

Problema I.

Datis XXXVI fixarum aſcenſionibus rectis *mediis* Cl. *MASKELYNE* in tempore, convertere easdem in *apparentes*, per tabulas ſpeciales pag. IV — pag. XII.

1) E catalogo harum fixarum pag. III, ad initium anni 1802 conſtructo, excerpatur aſcenſio recta media fixae propoſitae in tempore, appoſita ejusdem variatione annua, cum qua reducatur aſcenſio recta ad annum datum. Reductio haec ſemper ſubtractiva eſt, ſi annus datus catalogi epocham praecedit, et contra additiva.

2) Ad ſupputandam partem variationis pro data anni die, exquire e tabula pag. 42 factorem, huic diei reſpondentem, qui, ductus in omnem variationem annuam, dabit partem hujus variationis competentem.

3) Excerpatur ex ephemeridibus aſtronomicis longitudo vera ſolis pro die data, cum qua ingredere tabulas ſpeciales *aberrationis* (pag. IV — pag. XII), ex quibus reperies quantitatem *aberrationis*, adhibitis, ſi opus fuerit, partibus proportionalibus.

4) Supputetur vel excerpatur ex ephemeridibus aſtronomicis longitudo nodi lunae, cum quo argumento invenies in columna ſecunda quantitatem *nutationis*, parte proportionali non neglecta.

5) Collectis his *variationis*, *aberrationis* et *nutationis* quantitatibus in unam ſummam cum aſcenſione recta fixae, et rejecta *ſemper* quantitate conſtante 4,″0; obtinebis pro dato tempore aſcenſionem rectam fixae propoſitae *apparentem*, hoc eſt, *variationis*, *aberrationis* et *nutationis* effectibus affectam, et ad comparationem cum *obſervatione apparente* accommodatam.

Exemplum I.

Sit pro die 5 Januarii anni 1800 pro tempore culminationis aſcenſio recta *media* α *Tauri*, *Aldebaran*, in *apparentem* convertenda.

1) E fixarum catalogo pag. III habes aſcenſionem rectam in tempore ad annum 1802 α *Tauri* = $4^h\ 24'\ 34,''30$, cum variatione annua + 3,″423, et cum motu proprio annuo + 0,″002, adeoque omnis variatio = + 3,″425. Cum epocha catalogi annum datum duobus annis praecedat: variatio haec pro annis duobus erit

$+ 3,''425 \times 2 = + 6,''850$, in hoc caſu ſubtrahenda; itaque aſcenſio recta media ad initium anni 1800 erit $4^h\ 24'\ 27,''450$.

2) Pro data die 5 Januarii invenies in tabula pag. 42 factorem reſpondentem 0,03, qui, ductus in variationem annuam $+ 3,''425$, dabit $+ 3,''425 \times 0,03 = + 0,''10275$ pro parte variationis ad diem 5 Januarii usque.

3) Ex ephemeridibus aſtronomicis eſt pro anni die data longitudo vera ſolis $= 9^s\ 15,°38$, cum quo argumento invenies primo, in tabula pag. IV, pro $9^s\ 10°$ quantitatem aberrationis $+ 3,''180$, cum differentia $- 0,''152$ pro 10 gradibus variationis in argumento; adeoque pars proportionalis erit:

$$10° : - 0,''152 = 5,°38 : 0,''081776$$

quae pars a $+ 3,''180$ ſubtracta, cum tabulae numeri decreſcant, actualem dabit aberrationis quantitatem $+ 3,''09822$.

4) Pro tempore dato longitudo media nodi lunae aſcendentis eſt $= 1^s\ 3,°03$. In eadem tabula, columna ſecunda, quantitas nutationis pro argumento $1^s\ 0°$ eſt $= + 1,''322$, cum differentia decreſcente $- 0,''169$. Ergo pars proportionalis:

$$10° : - 0,''169 = 3,°03 : 0,''051207;$$

adeoque nutationis quantitas actualis $= + 1,''2708$.

5) Collectis omnibus his quantitatibus, rejecta quantitate conſtante 4,°0, prodit aſcenſio recta apparens α *Tauri* pro 5 Januarii 1800 $= 4^h\ 24'\ 27,''92176$.

En jam calculi typum:

Æ media α ♉ ad annum 1802	4^h	$24'$	$34,''30$
Variatio pro duobus annis $= + 3,''425 \times 2$ . . .	—		$6,850$
Æ media in temp. ad initium anni 1800	4	24	27, 450
Variatio ad 5 Jan. $= + 3,''425 \times 0,03$	+		0, 103
Aberratio cum arg. ☉ $9^s\ 15,°38$	+		3, 098
Nutatio cum arg. ☊☾ $1^s\ 3,°03$	+		1, 271
Summa			31, 922
Quantitas conſtans ſemper ſubtrahenda	—		4, 000
Æ apparens α ♉ die 5 Jan. 1800	4^h	$24'$	$27,''922$

Exemplum II.

Sit pro eodem die et anno, ut ſupra, et pro culminationis tempore aſcenſio recta *media* ſtellae *α Piſcis auſtrini*, *Fomahand*, in *apparentem* convertenda.

AR. media *Fomahand* ad annum 1802	22h	46′	40,″51
Variatio pro duobus annis = + 3,″343 × 2 . .	—		6, 686
AR. media in temp. ad initium anni 1800 . . .	22	46	34, 124
Variatio ad 5 Jan. = + 3, 343 × 0,03	+		0, 100
Aberratio cum arg. ☉ 9s 15,″14	+		1, 163
Nutatio cum arg. ☊☾ 1s 3,″04	+		0, 656
Summa			36, 048
Quantitas conſtans ſemper ſubtrahenda . . .	—		4, 000
AR. apparens *Fomahand* die 5 Jan. 1800 . . .	22h	46′	32,″048

Tabulae aberrationis et nutationis pro XXXVI fixarum declinationibus Cl. MASKELYNE.

Problema II.

Datis XXXVI fixarum declinationibus *mediis* Cl. *MASKELYNE* convertere easdem in *apparentes* per tabulas ſpeciales (pag. XIII—pag. XXII).

Calculus eodem perficitur, quo ſupra modo; memineris tamen, variationem annuam quandoque negativam eſſe, prout ſignum praefixum monet, et a ſumma aberrationis et nutationis quantitatum poſitivarum ſemper 40,″co rejicienda eſſe, ut habeatur declinatio *apparens* fixae propoſitae. Sequentes calculi typi omnia in aprico ponent.

Exemplum I.

Sit pro die 5 Januarii 1800 declinatio *media* fixae *α Tauri* in *apparentem* vertenda.

Declinatio bor. media *α Tauri* ad annum 1802 . . .	16°	5′	59,″4
Variatio pro duobus annis = + 7,″99 × 2 . . .	—		15, 98
Declinatio bor. media ad initium anni 1800 . . .	16	5	43, 42
Variatio ad 5 Jan. = + 7,″99 × 0,03	+		0, 24
Aberratio cum arg. ☉ 9s 15,″38	+		21, 38
Nutatio cum arg. ☊☾ 1s 3,″03	+		25, 78
Summa			90, 82
Quantitas conſtans ſemper ſubtrahenda . . .	—		40, 00
Declinatio bor. apparens *α* ♉ die 5 Jan. 1800 . . .	16°	5′	50,″82

Exemplum. II.

Quaeritur pro eodem die, quo ſupra, declinatio apparens fixae *Piſcis auſtrini (Fomahand.)*

Declinatio auſtr. media *Fomahand* ad annum 1802 . .			30° 39′ 52,″7	
Variat.	pro 2 ann. ☰ — 19,″10 × 2 ☰ + 38,″20			
	pro 5 Jan. ☰ — 19, 10 × 0,03 ☰ — 0, 57		+	37, 63
Aberratio cum arg. ☉ 9ˢ 15,°14			+	30, 45
Nutatio cum arg. ☊ ☾ 1ˢ 3,°04			+	26, 22
Summa			40	87, 00
Quantitas conſtans ſemper ſubtrahenda			—	40, 00
Declinatio auſtr. apparens *Fomahand* die 5 Jan. 1800 .			30° 40′	47,″00

Tabulae ſpeciales aberrationis et nutationis in aſcenſionem rectam et in declinationem ſtellae polaris.

Problema III.

Invenire aſcenſionem rectam et declinationem *apparentem* ſtellae polaris pro tempore quocunque dato.

Tabulae aberrationis et nutationis ſpeciales hujus fixae ad normam ſolitam conſtructae ſunt; ideoque nulla peculiari egent explicatione. Si quis vero ſummam adhibere velit accurationem, argumenta, aberrationis et nutationis effectus in aſcenſionem rectam exhibentia, majori cum cura ex ephemeridibus aſtronomicis petenda ſunt, et in interpolandis partibus proportionalibus earumdem differentiis ſecundis utendum erit. Porro, cum tabulae hae tantummodo pro annis 1790, 1800, 1810 et 1820 ſupputatae ſint: ſi aberrationis et nutationis effectus pro anno intermedio requirantur, duplicem neceſſe erit interpolationem inire; ſed propter motum diurnum hujus ſtellae lentiſſimum et obſervatu difficillimum ſubtilitates hae tuto praetermitti poterunt. En hic paradigmata, calculo curatiſſimo confecta.

Exemplum. I.

Sit aſcenſio recta *apparens ſtellae polaris* pro die 23 Julii 1800 ſupputanda, tempore culminationis inferioris.

Æ. media ſtellae polaris ad annum 1800	13°	5′	15,″00
Praeceſſio ad 23 Jul., habita ratione differ. ſecund. .	+	1	51, 99
Aberratio cum arg. ☉ 4ˢ 0,″44 } habita ratione	+	2	49, 89
Nutatio cum arg. ☊ ☾ 0 22, 45 } differ. quartar.	—	5	7, 51
Æ. apparens in momento culminationis inferioris .	13°	4′	49,″37
— — in tempore	12ʰ	52′	19,″29:

Exemplum II.

Eadem aſcenſio recta apparens tempore culminationis ſuperioris.

AR. media pro 1800	13°	5′	15,″00
Praeceſſio ad 23 Julii, hab. ratione differ. ſecund. .	+	1	51, 99
Aberratio cum arg. ☉ 4ˢ 0,″92 } habita ratione	+	2	54, 85
Nutatio cum arg. ☊ ☾ 0 22, 42 } differ. quartar.	—	5	7, 55
Æ. apparens in momento culminationis ſuperioris	13°	4′	54,″29
— — in tempore	0ʰ	52′	19,″619

Exemplum III.

Quaeritur declinatio *apparens ſtellae polaris* in momento culminationis inferioris.

Declinatio media pro 1800	88°	14′	25,″79
Praeceſſio ad 23 Julii	+		11, 32
Aberratio cum arg. ☉ 4ˢ 0,″44 } habita ratione .	—		18, 98
Nutatio cum arg. ☊ ☾ 0 22, 45 } differ. ſecund. .	—		0, 66
Declinatio apparens pro momento culmin. inferioris .	88°	14′	17,″47

Problema IV.

Data culminationefixae ad tubum meridianum recte conſtitutum, et ad horologium oſcillatorium ad tempus ſidereum temperatum, invenire tempus verum ſidereum, ſeu aberrationem horologii ab hoc tempore.

Pro dato obſervationis tempore convertetur aſcenſio recta *media* fixae obſervatae in *apparentem;* quae cum tempore obſervato tranſitus hujus fixae per meridianum collata, mox ſtatum horologii pro hoc momento indicabit. Nam ſi aſcenſio recta *apparens* ſupputata major eſt obſervata, tempus horologii indicibus notatum hac differentia *augendum;* contra vero, ſi aſcenſio recta haec apparens minor ſit obſervata, *minuendum* eſt, ut habeatur tempus verum ſidereum.

Exem-

Exemplum.

In diario obſervationum ſpeculae Grenovicenſis ad annum 1787 referuntur fixarum culminationes die 2 Martii α *Orionis* 5^h 43′ 19,″70, et π *Leonis* 9^h 48′ 38,″60, quaeritur ſtatus horologii pro his momentis, et tempus verum ſidereum. Calculi typus ſic ſe habebit:

Æ media α *Orionis* ad annum 1802	5^h	44′	27,″26
Variatio pro 15 annis	—		48, 66
Æ media ad annum 1787	5	43	38, 60
Variatio ad 2 Martii	+		0, 584
Aberratio cum arg. ☉ 11° 12,″25	+		2, 333
Nutatio cum arg. ☊☾ 9 11, 45	+		3, 137
Summa			44, 654
Quantitas conſtans			— 4, 000
Æ apparens 2 Martii 1787	5^h	43′	40,″654
Culminatio obſervata	5	43	19, 70
Retardatio horologii pro tempore ſidereo	+		20,″954

Æ media π *Leonis* e catalogo noſtro ad 1800 . .	147°	24′	27,″59
Variatio per 13 annos	—	10	18, 80
Æ media ad annum 1787	147	14	8, 79
Variatio ad 2 Martii	+		8, 57
Aberratio	+		18, 41
Nutatio	+		17, 03
Æ apparens π ♌ 2 Martii 1787 in ſpatio	147°	14′	52,″80
— — — — — in tempore . . .	9^h	48′	59,″519
Culminatio obſervata	9	48	38, 60
Retardatio horologii pro tempore ſidereo . . .	+		20,″919

Problema V.

Invenire aſcenſionem rectam *mediam* fixae per tubum culminatorium in meridiani plano rite conſtitutum.

1) Quaeratur ex XXXVI fixarum fundamentalium culminationibus tempus verum ſidereum, ſeu aequatio indicis horologii.

2) Applicetur aequatio haec inventa ad tempus obſervatum fixae determinandae, et habebis ejusdem aſcenſionem rectam *apparentem* pro momento factae obſervationis.

3) Convertatur aſcenſio recta *apparens* in *mediam*, applicando nimirum variationis, aberrationis et nutationis effectus ſignis contrariis.

Exemplum.

Sit in exemplo ex diario obſervatorii Grenovicenſis ſupra allato, ex obſervationibus die 2 Martii 1787 habitis, aſcenſio recta media ϒ *Leonis* definienda.

Obſervabantur illa die culminationes ſex ſtellarum praecipuarum, quae calculo peracto ſequentem praebuere aequationem indicis horologii.

Nomina ſtellarum	Tempus culminationis obſervatum	Aequatio indicis horologii
α Orionis	5^h 43′ 19,″70	+ 20,″954
Sirius	6 35 26, 84	+ 20, 846
Caſtor	7 20 40, 64	+ 21, 097
Procyon	7 27 49, 90	+ 21, 092
Pollux	7 31 57, 27	+ 21, 052
α Hydrae	9 16 48, 56	+ 21, 274
Medium arithmet.	7^h 18,′0	+ 21,″053
Temp. culm. ϒ☊	9 48, 6	
Differentia . .	2^h 30,′6	
Cum motus diurnus horologii + 0,″25 acceleratus eſſet, pro $2\frac{1}{2}$ horis idem erit		+ 0, 025
Adeoque aequatio horologii pro momento culminationis ϒ☊		+ 21,″078

Culminatio ϒ☊ obſervata eſt ad tempus horologii	9^h	48′	38,″60
Aequatio horologii . . . . . +			21, 078
Æ. apparens ϒ☊ die 2 Martii 1787 in tempore . .	9	48	59, 678
Haec Æ in partibus aequatoris	147°	14′	55,″17
Variatio ad diem 2 Martii usque	—		8, 57
Aberratio cum arg. ☉ 11^s 12,′25 } ſignis contrar.	—		18, 41
Nutatio cum arg. ☊☾ 9 11, 45	—		17, 03
Æ media ad initium anni 1787	147	14	11, 16
Variatio per 13 annos . . . . . +		10	18, 80
Æ. media ϒ☊ ad initium anni 1800	247°	24′	29,″96

Si tubus non ad amuſſim in meridiani plano conſtitutus fuiſſet, aſcenſio recta media ex comparatione cum alia fixa bene determinata et in eodem parallelo verſante, definiri debuiſſet. Sic in exemplo pro-

posito stella α *Orionis* quam proxime in parallelo π *Leonis* versatur. Calculus itaque hoc modo absolvitur.

Tempus observatum culminationis α Orionis . . .	5^h	43′	19,″70
— — — — — π Leonis . . .	9	48	38, 60
Differentia ascensionum rectarum	4^h	5′	18,″90
Pro motu diurno horologii per 4^h 5′		+	0, 04
	4	5	18, 94
Æ. apparens calculata α Orionis	5	43	40, 654
Æ. apparens π ♌ die 2 Martii 1787 in tempore . .	9^h	48′	59,″594
Haec Æ. in partibus aequatoris	147°	14′	53,″91
Et hinc, ut supra, Æ. media ad initium anni 1800	147	24	28, 70

Problema VI.

Invenire ascensionem rectam apparentem sideris erratici per tubum culminatorium in meridiano recte constitutum transeuntis.

1) Quaeratur ex fixarum culminationibus tempus verum siderеum, hoc est, aequatio indicis horologii.

2) Applicetur aequatio haec ad tempus culminationis planetae, et habebis ejusdem ascensionem rectam apparentem.

Exemplum.

Anno 1803 die 16 Maji observatae sunt in Specula KRNESTINA sequentes fixarum et planetae *Jovis* transitus per tubum meridianum, ex quibus calculo peracto appositae inveniebantur aequationes indicis horologii.

Nomina stellarum	Tempus culminationis observatum			Aequatio indicis horologii
β Leonis	11^h	38′	43,″000	+ 19,″358
β Virginis	11	40	8, 950	+ 19, 249
Jupiter, Centrum	11	47	25, 292	. . . .
ε Virginis	11	54	53, 400	+ 19, 235
ζ — —	12	3	6, 917	+ 19, 311
η — —	12	9	32, 967	+ 19, 315
θ — —	12	23	20, 250	+ 19, 399
χ — —	12	28	48, 433	+ 19, 334
γ — —	12	31	24, 583	+ 19, 311
ε — —	12	52	5, 350	+ 19, 502
δ — —	12	57	18, 400	+ 19, 468
Spica Virginis	13	14	33, 000	+ 19, 492
ζ — —	13	24	23, 217	+ 19, 448
Medium . . .	12^h	26,′5		+ 19,″369

Motus diurnus horologii erat — 2,″40 retardando; tempus culminationis Jovis 11^h 47,′4, ergo motus pro 39,′1 = — 0,″065; adeoque aequatio vera indicis horologii in momento tranſitus Jovis per meridianum = + 19,″304. Itaque tempus culminat. Jovis 11^h 47′ 25,″292

Aequatio indicis horologii + 19, 304

Æ. apparens ♃ in tempore 11^h 47′ 44,″596

Haec Æ. in partibus aequat. 176° 56′ 8,″940

Tubo culminatorio vel quadrante murali in meridiano non recte conſtituto, debuiſſet planeta cum fixis in eodem parallelo verſantibus conferri; exempli gratia in caſu propoſito cum fixis β et ϖ *Virginis*. Calculus itaque ſic ſe habebit.

Tempus obſerv. culmin. β ♍	=	11^h	40′	8,″950	. .	ϖ ♍ =	12^h	9′	32,″967
— — — — Jovis		11	47	25, 292	. . . .		11	47	25, 292
Differentia aſcenſionum rectarum	+	7′	16,″342	. . . .		—	22′	7,″675	
Motus horologii pro hac different.	+		0, 012	. . . .		—		0, 037	
	+	7′	16,″354	. . . .		—	22′	7,″638	
In partibus aequatoris . .	+	1°	49′	5,″31	. . .	—	5°	31′	54,″570
Æ. apparens fixae calculata . .		175	7	3, 135	. . . .		182	28	4. 250
Æ. apparens Jovis		176°	56′	8,″445	. . . .		176°	56′	9,″680

Medium . . . 176° 56′ 9,″063

Ut omnia, quae ad ſiderum loca tum media, tum apparentia reducenda requirantur, ad manus ſint, addimus hic novas refractionum tabulas a Cl. *DELAMBRE* ad mentem Cl. *DE LA PLACE* conſtructas, ex tabulis ſolis nuper editis *) excerptas, quae ſubtiliſſimae et difficillimae indaginis materies, a tot tantisque aſtronomis tentata, tandem ad ſummum perfectionis faſtigium perducta eſt. Adeant, qui omnem hanc theoriam inſpicere cupiunt, tabularum harum introductionem et opus immortale *Mécanique céleſte*, Vol. IV, pag. 27, cum operis noſtri propoſitum et limites hanc pertractare non patiantur. Exhibemus etiam tabulas has ſub forma aliquantulum mutata, quarum uſus et exempla expoſita applicationem mox perſpicuam reddent.

*) Tables aſtronomiques publiées par le bureau des longitudes de France, Première partie. Tables du Soleil, par. M. *Delambre*. — Tables de la Lune, par M. *Bürg* — Paris, chez *Courcier* 1806.

Problema VII.

Data apparenti ſideris diſtantia a vertice, vel ipſius altitudine atque aëris temperie ope Barometri et Thermometri explorata, invenire refractionem *mediam* et *veram*.

1) Capta ſideris diſtantia apparenti a vertice, vel ejusdem altitudine ad inſtrumentum ad hunc finem dispoſitum, notetur eodem tempore altitudo hydrargyri in Barometro, et ſtatus Thermometri in umbra et in libero aëre locati, ſumto inter utrosque medio arithmetico.

2) Ope diſtantiae apparentis a vertice vel altitudinis apparentis ſideris obſervatae (prout inſtrumentum alterutram indicaverit) quaere e tabula I pag. CXVI refractionis quantitatem, parte proportionali, tum opus fuerit, non neglecta, et obtinebis refractionem *mediam*. De qua quantitate ſume logarithmum. (Commoditatis cauſa quantitates hae adjectae ſunt in columna appoſita in minutis ſecundis expreſſae, ut earumdem logarithmi facilius ex tabulis exquiri poſſint.)

3) Ope altitudinis Barometri ſive ad pedem pariſinum ſive ad pedem anglicanum exhibitae, quaere in tabula II logarithmum reſpondentem.

4) Cum ſtatu medio Thermometri ſive *Réaumuriani* ſive *Fahrenheitiani* exquire e tabula III logarithmum competentem.

5) Summa logarithmorum horum, logarithmus refractionis *verae* eſt.

Exemplum.

In *ephemeridibus aſtronomicis pariſinis* ad annum XV, pag. 386, referuntur obſervationes Cl. *MÉCHAIN* circulo repetente *Carcaſſonae* ad inveſtigandam refractionem, inſtitutae.*) Obſervata eſt nimirum die 18 Januarii 1798 diſtantia apparens a vertice fixae „ *Urſae majoris* infra polum culminantis 86° 15' 48,"54, exiſtente altitudine hydrargyri in Barometro 27 poll. 4,5 lin. pariſ. in Thermometro *Réaumuriano* + 7,°0.

Die 21 Januarii eadem diſtantia a vertice ejusdem fixae erat 86° 15' 20,"27, Barometer 28 poll. 3,3 lin. pariſ. Thermometer +6,°15.

*) Idem hoc exemplum illuſtrationis cauſa proponit Cl. *DELAMBRE* in *tables aſtronomiques publiées par le bureau des longitudes de France*, ſed typi et calculi erroribus aliquantulum deformatum.

Inquiramus nunc primum in refractionem obſervatam. Oportet ad hoc negotium noſſe latitudinem loci et declinationem apparentem fixae obſervatae; primam Cl. *MÉCHAIN* per quadringentas et ultra obſervationes ſtellae polaris, tum infra, tum ſupra polum, circulo repetente invenerat 43° 12' 42,"7; ſecundam, calculo ſequenti ſubduximus.

Declinatio media ϒ Urſae majoris ad initium anni 1798.

Secundum catalogum Cl. *PIAZZI* = 50° 19' 36,"52
— — — — *MAYERI* = 36, 50
— — — — *BRADLEJI* = 36, 70

Declinatio media 1 Jan. 1798 =	50° 19' 36,"57		50° 19' 36,"57
Praeceſſ. ad 18 Jan. cum praec. ann. −18,"26	− 1, 28	ad 21 Januar	— 1, 46
Aberratio cum arg. ☉ 9ˢ 28,"97	−17, 78	☉ = 10ˢ 2,°0	— 17, 90
Nutatio cum arg. ☊☾ 2 10, 95	+ 4, 83	☊☾ = 2 10, 8	+ 4, 81
Declinatio apparens 18 Jan. =	50° 19' 22,"33	21 Januarii . .	50° 19' 22,"02

Hinc	18 Jan.	21 Jan.
Diſtantia a vert. obſervata =	86° 15' 48,"54	86° 15' 20,"27
Latitudo *Carceſſonae* =	43 12 42, 70	43 12 42, 70
Compl. decl. app. obſerv.	39 28 31, 24	39 28 2, 97
Decl. app. obſerv.	50 31 28, 76	50 31 57, 03
Decl. app. calculata	50 19 22, 33	50 19 22, 02
Refractio obſervata	12' 6,"43	12' 35,"01

Refractionis calculus ex tabulis ita ſe habet.

Refract. med. pro Diſt. a vert. 86° 15' 48,"54 e tab. I = 745,"42 Log. = 2,87240
Pro Barom. 27 p. 4,5 l. e. tab. II . . . . . Log. = 9,98895
Pro Therm. + 7,°0 e tab. III . . . . . Log. = 0,00200

Refractionis verae Log. = 2,86335 = 730,"05
Refractio vera ex tabulis = 12' 10,"05
Refractio vera obſervata = 12 6, 43
Differentia . . = + 3,"62

Itidem pro die 21 Januarii.

Refract. med. pro Diſt. a vert. 86° 15' 20,"27 = 744,"27 Log. = 2,87173
Pro Barom. 28 p. 3,3 l. e tab. II . . . . . Log. = 0,00306
Pro Therm. + 6,°15 e tab. III . . . . . Log. = 0,00379

Refractionis verae Log. = 2,87858 = 756,"09
Refractio vera ex tabulis = 12' 36,"09
Refractio vera obſervata = 12 35, 01
Differentia . . . . + 1,"08

Si refractio haec ad mentem et per tabulas aliorum aſtronomorum computetur, differentiae hae fuiſſent ſecundum *BRADLEJUM* + 11,"5, *BÜRG* + 30,"6, *MAYERVM* + 4,"3, *PIAZZI* + 5,"3, *DELAMBRE* + 9,"8.

Problema VIII.

Invenire declinationem ſideris erratici, ex diſtantia apparente a vertice obſervata, ex ſola comparatione cum fixis in ejusdem parallelo verſantibus, errore inſtrumenti et latitudine loci non cognitis.

1) Convertantur diſtantiae a vertice obſervatae et apparentes tum planetae, tum fixae in veras, differentia earumdem erit diſſerentia declinationum.

2) Supputetur declinatio apparens fixae pro momento habitae obſervationis, et applicetur differentia diſtantiarum verarum a vertice, *addendo* illam nimirum ad declinationem apparentem fixae, ſi ejusdem diſtantia a vertice obſervata major, *ſubtrahendo* autem, ſi minor illa planetae fuerit. Contrarium locum habet, ſi declinatio fixae auſtralis eſt.

Exemplum.

In diario aſtronomico ſpeculae Grenovicenſis habentur ad annum 1787 die 23 et 24 Octobris ſequentes diſtantiae a vertice planetae *Urani*, et fixarum in ejusdem parallelo.

1787	Nomina ſtellarum	Diſt. a vertice appar. obſerv.	Barom. in poll. angl.	Thermom. Fahrenh.
Octobr. 23	Uranus	30° 57' 52,"0	29,77	+ 43°
24	μ Geminorum	28 51 45, 8	29,67	+ 45,3
	ν — —	31 8 11, 3		

Calculus declinationis ſic ſe habebit.

	Urani	μ Geminorum	ν Geminorum
Diſt. a vert. apparens . . .	30° 57' 52,"0	28° 51' 45,"8	31° 8' 11,"3
Refractio vera	+ 35, 26	+ 32, 21	+ 35, 30
	28 52 18, 01	31 8 46, 60	
Diſt. a vertice vera . . .	30 58 27, 26	30 58 27, 26	30 58 27, 26
Differentia	—	2° 6' 9,"25	+ 0° 10' 19,"34

	μ Geminorum			ν Geminorum		
Declinatio media 1800 ſec. Cl. *PIAZZI* . . .	22°	36'	9,"7	20°	19'	32,"4
Praeceſſio 13 annorum	+		12, 22	+		19 39
Declinatio media ad annum 1787	22°	36'	21,"92	20°	19'	51,"99
Praeceſſio ad 24 Octobr	—		0, 75	—		1, 20
Aberrat. cum arg. ☉ 7ˢ 1,"7	+		0, 08	+		0, 68
Nutat. cum arg. ☊☾ 8ˢ 28,"9	−		0, 51	—		0, 73
Declinatio appar. 24 Octobris 1787 . . .	22°	36'	20,"74	20°	19'	50,"65
Differ. diſtantiarum a vertice	— 2	6	9, 25	+ 0	10	19, 34
	20°	30'	11,"49	20°	30'	9,"99

Sumto medio declinatio Urani 23 Oct. 1787 erit 20° 30' 10,"74 bor.

Cum in caſu praeſenti cognitus ſit error inſtrumenti, quem *errorem collimationis* dicimus, et in commercio meo aſtronomico epiſtolico *) exhibitus ſit + 1,"6; cum porro cognita ſit latitudo ſpeculae Grenovicenſis 51° 28' 39", poterit ex obſervata diſtantia apparenti Planetae ejusdem declinatio apparens immediate derivari.

Eſt enim:

Diſtantia obſervata a vertice Urani 23 Oct. 1787 =	30°	57'	52,"0
Error collimationis . . . . . +			1, 26
Refractio vera . . . . . +			35, 26
	30°	58'	28,"52
Latitudo	51	28	39
Declinatio apparens Urani borealis	20°	30'	10,"48 a ſupra inventa vix diverſa.

*) Monatl. Correſp. XI B. pag. 205.

Tabulae praeceſſionis annuae fixarum in aſcenſionem rectam.

Problema IX.

Invenire per tabulam pag. CXV et CXVI praeceſſionem annuam in aſcenſionemrectam fixae propoſitae.

Tabula haec conſtructa eſt ad punctorum aequinoctialium praeceſſionis annuae quantitatem 50,″07736, disquiſitionibus noſtris erutam, ad annum 1850. Poterit illico reduci ad annum 1750 ſeculi elapſi, auferendo tantummodo a numeris, in hac tabula relatis, quantitatem conſtantem 0,″026.

Cum argumento aſcenſionis rectae in latere, et cum argumento declinationis fixae in fronte, exquiruntur immediate e tabula quantitates praeceſſionis competentes, prout monita huic tabulae adſcripta jubent.

Exemplum I.

Sit praeceſſio annua fixae ϖ *Leonis* in aſcenſionem rectam pro anno 1800 ex hac tabula petenda. Aſcenſio recta hujus fixae eſt $4^s\ 27,''408$, ejusdem declinatio borealis 8,″999.

Pro Æ $4^s\ 25^\circ$ cum arg. decl. bor. 8,″999 invenitur e tab. pro 1850	47,″724
— — $5^s\ 0^\circ$ — — — — — — — — — — — —	47, 491
Differ. pro 5°	0,″233
Pars proportionalis pro 2,″408	0, 112
Ergo pro Æ $4^s\ 27,''408$ erit praeceſſio ad annum 1850 . . .	47,″612
Diminutio pro 50 annis $\frac{0,''026}{2}$	— 0, 013
Inde praeceſſio annua ϖ *Leonis* 1800	47,″599
Ex formula pag. 36 ſequitur	47, 600

Exemplum II.

Quaeratur praeceſſio annua fixae *Fomahand* in aſcenſionem rectam pro anno 1900. Aſcenſio recta pro initio hujus ſeculi erit $21^s\ 13,''0207$, et declinatio auſtralis 30,″1495.

	μ Geminorum			ν Geminorum		
Declinatio media 1800 ſec. Cl. *PIAZZI* . . .	22°	36'	9,"7	20°	19'	32,"4
Praeceſſio 13 annorum	+		12, 22	+		19 50
Declinatio media ad annum 1787	22°	36'	21,"92	20°	19'	51,"90
Praeceſſio ad 24 Octobr	—		0, 75	—		1, 20
Aberrat. cum arg. ☉ 7ˢ 1,°7	+		0, 08	+		0, 68
Nutat. cum arg. ☊ 8ˢ 28,°9	−		0, 51	—		0, 73
Declinatio appar. 24 Octobris 1787 . . .	22°	36'	20,"74	20°	19'	50,"65
Differ. diſtantiarum a vertice	— 2	6	9, 25	+ 0	10	19, 34
	20°	30'	11,"49	20°	30'	9,"99

Sumto medio declinatio Urani 23 Oct. 1787 erit 20° 30' 10,"74 bor.

Cum in caſu praeſenti cognitus ſit error inſtrumenti, quem *errorem collimationis* dicimus, et in commercio meo aſtronomico epiſtolico *) exhibitus ſit + 1,"6; cum porro cognita ſit latitudo ſpecu' Grenovicenſis 51° 28' 39", poterit ex obſervata diſtantia appa: Planetae ejusdem declinatio apparens immediate derivari.

Eſt enim:

Diſtantia obſervata a vertice Urani 23 Oct. 1787 =	30°	57'	52,"0
Error collimationis . . . . . +			1, 26
Refractio vera . . . . . +			35, 26
	30°	58'	28,"
Latitudo	51	28	39
Declinatio apparens Urani borealis	20°	30'	

*) Monatl. Correſp. XI B. pag

[redacted] oris
[redacted] cal-
[redacted] inL.
[redacted] aequa-
[redacted] clipticae
[redacted] maxima
[redacted] med. ⊙ +

Invenire [redacted]
[redacted]

[redacted] ,6,"8598 fin 2L.⊙
[redacted] -12,"9463 fin 4L.⊙
[redacted] — 0,"3726 fin 6 L.⊙
[redacted] ,925 fin. ſuppl.Long.☊
[redacted] ⊙ — L. ☊).

Cum [redacted] variationem ſecularem
[redacted] obliquitate 23° 27' 4,"6,
[redacted] ma centri 1° 55' 9,"0:
ta jubent. ,323 fin, 2 anom. med. ⊙.

[redacted] f L.⊙ — 595,"9911 fin 2 L.⊙
Sit [redacted] , cof 3L.⊙ + 12,"9081 fin 4 L.⊙
[redacted] ,4 cof 5L.⊙ — 0,"3711 fin 6 L.⊙
[redacted] in temp. + 0,"09925 fin Long.☊
Pro [redacted] ,013 fin (2 L.⊙ — L.☊).
[redacted]

[redacted] Differ. pro 5° [redacted]
Pars propo[redacted]
Ergo pro [redacted]
Diminutio [redacted]

Inde [redacted]
Ex formula

[redacted] trae pag. CXXXVI ſeq. ab ovo et
[redacted] is compendii cauſa ad argumen-
[redacted] in tempore redactae ſunt, quae
[redacted] i in *medium* et viciſſim protenus
[redacted] n harum elementis jam alibi fuſius
[redacted] uſus demonſtrare et exemplis illu-

[redacted] b l e m a I.

[redacted] convertere in medium.

[redacted] x e m p l u m I.

Qua[redacted]
[redacted] 1791 Gothae die 31 Januarii culminatio pla-
[redacted] 36,"374 tempore ſidereo, quaeritur tempus

Pro Æ 11ˢ 10° invenitur cum arg. declin. 30,°1495 auſtr. . .	49,°882
— — 11ˢ 15° — — — — — — — — — — . .	48, 934
Differ. pro 5°	0,°948
Pars proportionalis pro 3,°0207	0, 573
Ergo pro Æ 11ˢ 13,°0207 erit praeceſſio ad annum 1850 .	49,°309
pro 50 annis $= \frac{0,°026}{2}$	+ 0, 013
Inde praeceſſio annua *Fomahand* 1900	49,°322
Formula pag. 36 hanc praeceſſionem praebet	49, 310

Tabulae ſolares ad convertendum tempus ſidereum in tempus ſolare medium et verum, et viciſſim.

Cum in hodiernae aſtronomiae praxi uſus univerſalis ſit, horologiorum motus ad veram aeque diuturnam ſiderei diei longitudinem temperare, et ex fixarum culminationibus tempus verum ſidereum nanciſci; contingit ſaepenumero, ut in planetarum obſervationibus tempora *vera* et *media* ſolis noſſe oporteat. Quomodo tempora haec tabularum ſolarium ope inter ſe convertenda eſſent, ampliſſime in tabulis noſtris motuum ſolis anno 1792 editis pag. 73 ſeq. jam explicavimus. Sed cum haec temporum aeſtimatio in praxi aſtronomica perpetuo recurrat: gratam et acceptam rem me facturum putabam, ſi ſequentes tabulas ſolares ad convertenda tempora aſtronomica *ſiderea* in tempora ſolaria tum *media*, tum *vera* ſecundum recentiſſimas tabulas noſtras motuum ſolis, anno 1804 recuſas, hic iterum exhiberem, et ad uſum commodiorem ordinarem.

Continent igitur tabulae hae annorum epochas aſcenſionum rectarum mediarum ſolis, et motus hos medios pro quavis menſis die in tempore, quibus adjectae ſunt tabulae compendioſiſſimae pro aequatione temporis ad mentem Cl. *DELAMBRE* *) conſtructae, ſed novo et iterato calculo ſubjectae, cum nobis viſum ſit

*) Tables aſtronomiques publiées par le bureau des longitudes de France. Premiere partie. Tables du Soleil, par M. DELAMBRE. Tables de la Lune, par M. BÜRG. à Paris, 1806.

in termino ſecundo formulae generalis aequationem temporis $d\,T = \frac{1}{15}$ (Æ vera ☉ — Æ med. ☉) exprimente (pag. *c* 3), calculi vel typi errore loco + 79,″378 ſin L legendum eſſe + 80,″778 ſin L.

Prodit itaque nobis calculo peracto formula ſequens pro aequatione temporis ad annum 1800, aſſumta obliquitate eclipticae 23° 27′ 56,″7, longitudine perigaei 9ˢ 9° 29′, aequatione maxima centri 1° 55′ 27,″84, unde 1° 55′ 26,″666 ſign. anom. med. ☉ + + 1′ 12,″688 ſin. 2 an. med. ☉.

$$dT = +0,''0407 + 79,''3921 \text{ ſin Long.} ☉ + 435,''8205 \text{ coſ L.} ☉ - 596,''8598 \text{ ſin 2L.} ☉$$
$$+1,''5890 \text{ coſ 2 L.} ☉ - 3,''4243 \text{ ſin 3 L.} ☉ - 18,''7990 \text{ coſ 3L.} ☉ + 12,''9463 \text{ ſin 4L.} ☉$$
$$-0,''0867 \text{ coſ 4 L.} ☉ + 0,''1416 \text{ ſin 5 L.} ☉ + 0,''8475 \text{ coſ 5L.} ☉ - 0,''3726 \text{ ſin 6 L.} ☉$$
$$+0,''0029 \text{ coſ 6 L.} ☉ + \text{ſumm. pert. plan. in temp.} + 0,''09925 \text{ ſin. ſuppl. Long.} ☊$$
$$+0,''117 \text{ ſin } (2\,\text{L.} ☉ + \text{L.} ☊ + \text{VI}^{s}) - 0,''013 \text{ ſin } (2\,\text{L.} ☉ - \text{L.} ☊).$$

Porro ad aſſequendam hujus aequationis variationem ſecularem ſupputata eſt eadem ad annum 1900, adhibita obliquitate 23° 27′ 4,″6, longitud. perigaei 9ˢ 11° 12′ 36″, aequat. maxima centri 1° 55′ 9,″02 ideoque 1° 55′ 7,″84 ſin. anom. med. ☉ + 1′ 12″,323 ſin. 2 anom. med. ☉.

$$dT = +0,''0473 + 93,''4173 \text{ ſin Long.} ☉ + 432,''2752 \text{ coſ L.} ☉ - 595,''9911 \text{ ſin 2 L.} ☉$$
$$+1,''8548 \text{ coſ 2L.} ☉ - 4,''0230 \text{ ſin 3L.} ☉ - 18,''6223 \text{ coſ 3L.} ☉ + 12,''9081 \text{ ſin 4 L.} ☉$$
$$-0,''1010 \text{ coſ 4L.} ☉ + 0,''1662 \text{ ſin 5L.} ☉ + 0,''8384 \text{ coſ 5L.} ☉ - 0,''3711 \text{ ſin 6 L.} ☉$$
$$+0,''0034 \text{ coſ. 6L.} ☉ + \text{ſummae perturb. plan. in temp.} + 0,''09925 \text{ ſin Long.} ☊$$
$$+0,''117 \text{ ſin } (2\,\text{L.} ☉ + \text{L.} ☊ + \text{VI}^{s}) - 0,''013 \text{ ſin } (2\,\text{L.} ☉ - \text{L.} ☊).$$

Hinc juxta has formulas tabulae noſtrae pag. CXXXVI ſeq. ab ovo et in praeſenti forma conſtructae, et majoris compendii cauſa ad argumentum aſcenſionis rectae mediae ſolis in tempore redactae ſunt, quae converſionem temporis ſolaris *veri* in *medium* et viciſſim protenus ſuppeditant. Cum de tabularum harum elementis jam alibi fuſius egerimus, ſufficiet, hic illarum uſus demonſtrare et exemplis illuſtrare.

Problema I.

Datum tempus ſidereum convertere in medium.

Exemplum I.

Obſervata eſt anno 1791 Gothae die 31 Januarii culminatio planetae *Urani* hora 8 59′ 36,″374 tempore ſidereo, quaeritur tempus ſolare medium.

				☊
E tab. III epocha Æ mediae ſolis 1791 . .	18h	40′	13,″089	424
— tab. IV pro die 31 Januarii	2	2	13, 215	5
— tab. VIII aequatio punct. aequin. cum arg. ☊ 429	+		0, 474	429
— tab. IX pars II aequat. punct. aequin. cum arg. long. ☉ 10s 11°	+		0, 068	
Æ media ſolis ab aequinoctio vero . . .	— 20h	42′	26,″846	
Tempus ſidereum datum	8	59	36, 374	
Tempus medium approximatum	12h	17′	9,″528	
E tab. XV acceleratio				
pro 12h . . . 1′ 57,″954				
17′ . . . 2, 785				
9,″5 0, 026				
2′ 0,″765	—	2	0, 765	
Tempus ſolare medium quaeſitum	12h	15′	8,″763	
Cl. *DELAMBRE* in tabulis ſuis habet . .	12	15	8, 88	
Tabulae noſtrae mot. ſolis ao. 1792 ed. pag. 76	12	15	8, 683	

Exemplum II.

Anno 1787 die 18 Januarii obſervata eſt in obſervatorio regio Grenovicenſi initium eclipſis Solis tempore vero ſidereo 18h 5′ 4″; quaeritur tempus ſolare medium hujus obſervationis.

				☊
E tab. III epocha Æ mediae ſolis 1787 . . .	18h	40′	5,″761	209
— tab. I reduct. epoch. pro differ. meridianor.	+		7, 052	
— tab. IV pro die 18 Januarii	1	10	57, 996	3
— tab. VIII aequat. punct. aequin. c arg. ☊ 212	+		1, 069	212
— tab. IX pars II aequat. punct. aequin. cum arg. long. ☉ 9s 28°	+		0, 058	
Æ media ſolis ab aequinoctio vero . . .	— 19h	51′	11,″936	
Tempus ſidereum datum	18	5	4, 000	
Tempus medium approximatum	22h	13′	52,″064	
E tab. XV acceleratio				
pro 22h . . . 3′ 36,″249				
13′ . . . 2, 130				
52,″0 0, 142				
3′ 38,″521	—	3	38, 521	
Tempus ſolare medium quaeſitum	22h	10′	13,″543	
Cl. *DELAMBRE* in tabulis ſuis habet . .	22	10	13, 67	
Tabulae noſtrae ſolares anno 1792 ed. pag. 77 .	22	10	13, 480	

Problema II.

Datum tempus ſidereum convertere in tempus ſolare verum.

Exemplum.

Sit tempus ſidereum obſervationis eclipſis ſolis, in Exemplo II Problematis I allatum, in tempus ſolare verum vertendum.

Converſo tempore ſidereo in tempus ſolare medium quaeritur aequatio temporis ſequenti modo.

	I	II	III	IV	V	VI	VII	VIII	IX	X	☊
Per tab. III arg. ad annum 1787 . . .	778	372	994	544	146	377	711	189	130	900	209
— tab. VI arg. pro 18 Januarii . . .	49	610	31	23	45	48	12	3	4	2	3
— tab. VII arg. pro 22^h 10′ t. m. .	3	31	2	1	2						
	330	13	27	568	193	425	723	192	134	902	212

AR. med ⊙ ex ſup. exempl. II = 19^h 51′ 11,″936
E tab. VII mot. med ſolis
pro 22^h 10′ 13,″5 t. m. . . . . + 2 38, 522

AR. med. ⊙ arg. tab. X . . . 19^h 54′ 50,″458 + 11′ 12,″86
Variatio ſecularis ab anno 1800 usque ad 1787 . . . . + 1, 05
Proinde aequatio temporis = + 11′ 14,″81

Argumenta reliqua modo ſequenti formantur.

Arg. XI = 2 Arg. III + Arg. VII = 730
Arg. XII = Arg. III + Arg. VII = 777
Arg. XIII = 2 Arg. VII — Arg. III = 419
Arg. XIV = Arg. IV — Arg. VIII = 376
Arg. XV = 2 Arg. IV — Arg. VIII = 944
Arg. XVI = 2 Arg. VIII — Arg. IV = 816
Arg. XVII = Arg. V — Arg. IX = 59
Arg. XVIII = 2 Arg. V — Arg. IX = 858
Arg. XX = 2 Arg. I + Arg. ☊ + 500 = 872

Aequationes tabulae XI.

Arg. = +		Arg. = +	
II	= 1,″05	XI	= 0,″99
III	= 0, 90	XII	= 1, 00
IV	= 0, 87	XIII	= 0, 94
V	= 0, 66	XIV	= 0, 97
VI	= 0, 99	XV	= 1, 04
VII	= 0, 96	XVI	= 1, 00
VIII	= 1,″12	XVII	= 1, 07
IX	= 0, 88	XVIII	= 1, 04
X	= 1, 01	☊	= 1, 09
		XX	= 1, 09
	8,″43		10,″23
			8, 43

Summa aequat. + 18,″66
Pars conſtans . . . — 19, 00
Summa aeq. = — 0,″34

— 0, 34
Aequatio temp. = + 11′ 14,″47
Tempus med. 22^h 10′ 13,″543 in verum vertendum . . . . . 22^h 10 13, 543
Mutando ſignum aequationis temp. erit tempus verum quaeſitum . . . . . = 21^h 58′ 59,″073
Hanc aequationem temporis Cl. *DELAMBRE* ex tabulis ſuis invenit . . . . . + 11′ 16,″5
Inde tempus verum . . . . . 21^h 58′ 57,″17

Differentia haec notabilis duorum minutorum ſecundorum ortum trahere videtur ex erroneo termino ſecundo formulae generalis apud Cl. *DELAMBRE*, ut ſupra jam pag. 179 commemoravimus.

Problema III.

Datum tempus ſolare medium vertere in ſidereum.

Exemplum.

Anno 1787 die 2 Januarii obſervata eſt culminatio *Veneris* Maſſiliae tempore ſolari medio $0^h\ 17'\ 25,''5$; quaeritur tempus ſidereum habitae obſervationis.

				Ω
E tab. III epocha Æ mediae ſolis 1787 . . .	18^h	$40'$	$5,''761$	209
— tab. I reduct. epoch. pro differ. meridianor.	+		3, 524	
— tab. IV pro die 2 Januarii		7	53, 110	
— tab. VII mot. med. ☉ pro $0^h\ 17'\ 25,''5$ . .			2, 862	
— tab. VIII aequat. punct. aequin. c. arg. Ω 209	+		1, 064	
— tab. IX pars II aequat. punct. aequin. cum arg. long. ☉ $9^s\ 11°$	+		0, 025	
	18^h	$48'$	$6,''346$	
Tempus datum ſolare medium	0	17	25, 5	
Tempus verum ſidereum	19^h	$5'$	$31,''846$	
Cl. *DELAMBRE* in tabulis ſuis habet . .	19	5	31, 92	
Tab. noſtra ſolaris pag. 78	19	5	31, 946	

Problema IV.

Datum tempus ſolare verum vertere in ſidereum.

In exemplo problematis II ſupra allato, converſio temporis ſidereum in tempus verum ſolare, nulla laborat difficultate, quoniam tempus ſidereum in tempus ſolare medium ſine ullo impedimento verti poteſt, pro quo tempore illico aſcenſionem rectam mediam ſolis, id eſt, argumentum quaeſitum tabulae X poteris computare. Sed non ita ſe habet res convertendo tempus ſolare verum in ſidereum. Hic ſupponitur, aequationem temporis jam praecognitam eſſe. V. g. in exemplo ſequenti Æ. media ſolis pro $4^h\ 7'\ 19''$ tempore vero, interea adhibito loco tempore medio nondum cognito, eſt $15^h\ 29'\ 15,''647 =$ Arg. approximato tabulae X, cum quo aequationem temporis approximatam invenies $— 15'\ 29,''2$. Adde vel ſubtrahe, prout aequatio temporis additiva vel ſubtractiva erit, motum medium ſolis pro hac quantitate aequationis temporis ad aſcenſionem rectam mediam et obtinebis argumentum verum tabulae X. Pro-

Inde in hoc exemplo erit mot. med. ☉ pro — 15′ 29,″2 = — 2,″544, a 15ʰ 29′ 15,″647 ſubtrahendus. Argumentum tabula X erit itaque 15ʰ 29′ 13,″103.

Sit tempus verum 4ʰ 7′ 19,″0 Pariſiis die 13 Novembris 1805 in tempus ſidereum vertendum.

Pro	AR. media ☉	I	II	III	IV	V	VI	VII	VIII	IX	X	☊
III 1805	18ʰ 38′ 40,″450	777	988	253	973	627	765	229	331	649	512	176
I Red. epoch. Parif.	+ 5, 517	..	..	..	..	..	..	..	..	..	..	..
IV 13 Novbr.	20 49 58, 037	832	294	521	391	762	804	210	52	70	28	43
V 31 Octobr. }	. . . . .	36	440	22	16	33	34	9	2	3	1	2
VI 13 dieb. }	. . . . .	..	6	..	..	..	..	..	..	..	..	..
VII 4ʰ 7′ 19″ }	+ 40, 627	..	..	..	..	..	..	..	..	..	..	..
VIII ☊ 222	+ 1, 084	..	..	..	..	..	..	..	..	..	..	..
IX P. II. ☌	— 0, 068	..	..	..	..	..	..	..	..	..	..	..
AR. med. ☉ approx.	15ʰ 29′ 15,″647	..	..	..	..	..	..	..	..	..	..	..
Mot. med. ☉ ex tabula VII pro aequ. tempor. approx.	. . . . .	..	..	..	..	..	..	..	..	..	..	..
— 15′ 29,″2	— 2, 544	..	..	..	..	..	..	..	..	..	..	..
AR. med. ☉ arg. tab. X	15ʰ 29′ 13,″103	645	728	796	380	422	603	448	385	722	541	223

Cum hoc argumento erit e tab. X . . — 15′ 28,″80
Var. ſecular. ab anno 1806 usque ad 1805 — 0, 46
Proinde aequatio temp. = — 15′ 29,″26

Modo ſimili ut in exemplo Probl. II. argumenta reliqua formantur.

Arg. XI = 244
Arg. XII = 40
Arg. XIII = 100
Arg. XIV = 995
Arg. XV = 375
Arg. XVI = 390
Arg. XVII = 700
Arg. XVIII = 122
Arg. XX = 13

— 0, 80

Aequat. tab. XI.

Arg.	= +	Arg.	= +
II	= 0,″51	XI	= 1,″02
III	= 0, 83	XII	= 0, 99
IV	= 1, 15	XIII	= 0, 98
V	= 0, 64	XIV	= 1, 02
VI	= 1, 02	XV	= 0, 96
VII	= 0, 82	XVI	= 0, 99
VIII	= 0, 98	XVII	= 1, 02
IX	= 1, 16	XVIII	= 1, 03
X	= 0, 98	☌	= 1, 09
		XX	= 1, 01
	8,″09		10,″11
			8, 09
Summ. aequat.	+		18,″20
Pars conſt.	—		19, 00
Summ. aequat.	—		0,″80

Aequatio temporis . . . . . — 15′ 30,″06
Tempus verum datum 4ʰ 7 19, 0
Tempus medium . . . . . 3ʰ 51′ 43,″94
AR. media ☉ pro hoc temp. medio 15 29 13, 10
Tempus ſidereum quaeſitum . . . 19ʰ 21′ 2,″04
Hanc temporis aequationem Cl. *DE-LAMBRE* invenit juſta aliquantulum minorem . . . . . — 15′ 29,″2

De luminis aberratione, qua ſtellarum errantium loca afficiuntur.

Aberratio, ſeu mutatio, quam propagatio ſucceſſiva luminis ſtellarum inerrantium locis infert, neceſſario et planetarum cometarumque loca afficere et mutare debet. Calculus hujus quantitatis perfacile abſolvitur dato motu geocentrico ſideris, et data ejusdem diſtantia a terra. Nam in aſtronomiae elementis paſſim demonſtratur, eorumdem aberrationem tum in longitudinem, latitudinem, aſcenſionem rectam, tum in declinationem ſemper aequalem eſſe motui geocentrico in long. latit. aſcenſ. rect. et in declinat. qui huic temporis intervallo, quo lux a ſidere, planeta vel cometa, ad terram usque pervenit, reſpondeat. *) Lux diſtantiam mediam telluris a ſole inter tempus 8′ 13,″2 percurrit, adeoque quamvis aliam diſtantiam D in $(8' 13,''2) \times D$ temporis intervallo. Sit porro motus geocentricus planetae diurnus $= g$, erit hic motus dato tempore

$$= \frac{8' 13,''2}{24^H} \cdot D.g = \frac{493,''2}{1440'} \cdot D.g,$$

ſi motus geocentricus diurnus habetur in minutis *primis*; vel $\frac{493,''2}{86400''} \cdot D.g$, ſi motus hic datur in minutis ſecundis. Hinc horum factorum conſtantium logarithmi erunt:

pro motu *diurno* geocentrico ſideris

in minutis primis = Log. 9,5346606
in minutis ſecundis = Log. 7,7565094

pro ejusdem motu *horario* geocentrico

in minutis primis = Log. 0,9148718
in minutis ſecundis = Log. 9,1367206.

1) Sit e. g. aberratio ſolis determinanda. Diſtantia hujus ſideris a tellure $D = 1$, motus diurnus $g = 59' 8,''3 = 3548,''3$, cujus logarithmus ad logarithmum conſtantem 7,7565094 additus, dabit effectum aberrationis $= 20,''255$.

Effectus itaque aberrationis pro aliis diſtantiis et motibus etiam ſic exprimi poterit $\frac{20,''255}{59' 8,''3} \cdot D.g = \frac{20,''255}{3548,''3} \cdot D.g$.

*) *Mém. de l'Acad. R. des ſciences de Paris, 1746*, pag. 567.

2) Qui-

2) Quinam eſt effectus aberrationis in lunam? Diſtantia lunae a tellure eſt = 0,00253 = D, motus diurnus lunae medius = 13° 10′ 35″ = 47435″ = g. Additis itaque logarithmis D et g cum logarithmo conſtante, effectus aberrationis invenietur = 0,″685, ob exiguitatem omnino negligendus.

Quantitates aberrationis adhibentur aut loco *calculato* ſeu *vero*, aut loco *obſervato* ſeu *apparenti*, prout calculi natura poſtulat. In primo caſu effectus aberrationis ſemper directioni motus planetae oppoſitus, itaque ſigno contrario adhibendus eſt. Hinc, ſi longitudo (vel aſcenſ. rect. vel latit. vel decl. etc) planetae creſcit, ſubtrahenda eſt quantitas aberrationis a loco planetae calculo eruto ſeu *vero*; ſi vero longitudo etc. decreſcit, addenda eſt ad planetae locum per tabulas calculatum, ut habeatur locus *apparens*. E contrario, addenda eſt aberratio in primo caſu, hoc eſt, longitudine creſcente, ad locum *apparentem* ſeu obſervatum; ſubtrahenda in ſecundo caſu, hoc eſt, longitudine decreſcente, a loco *apparente* ſeu obſervato, ut habeatur locus *verus*.

Tradunt has regulas perperam *Cl. CLAIRAUT* in *commentariis reg. ſcient. acad. Pariſienſ.* ad annum 1746, pag. 539 et poſt hunc Cl. *DE LA CAILLE* in *aſtronomiae elementis*, *Pariſ.* edit. IV, art. 595, prout monet Cl. *PINGRÉ* in *Comètographie*, Tom. II, pag. 258. Ad tollendum omne in poſterum haeſitationis et hallucinationis periculum, juvabit praecepta haec in ſequenti tabella ante oculos ponere.

Ad reducendum	Signum algebr. quo effectus aberrationis adhibendus	Si motus in long. AR. etc. ſideris erratici
locum plan. verum ſeu	—	directus
calculatum in *apparentem*	+	retrogradus
locum plan. appar. ſeu	+	directus
obſervatum in *verum*	—	retrogradus

Sunt aſtronomi aliqui, ut Cl. *EULER*, *DE LA CAILLE*, *DE LA LANDE*, qui planetarum loca, quae e tabulis aſtronomicis immediate deducuntur, loca *media* appellare ſolent. Utatur quivis nomine, quo lubet; modo explicet, quo ſenſu idem acceptum velit. Nobis loca, quae calculo ex tabulis planetariis obtinentur, *vera* ſunt, *apparentia* contra, prout haec per obſervationes

obtinemus, ut in prima editione tabularum noſtrarum ſolis pag. 143 jam monuimus. Si ſtellarum itaque ſive errantium, ſive inerrantium loca ex planetarum tabulis, vel ex fixarum catalogo petantur, ab aberrationis et nutationis effectibus immunia et *vera* ſunt. Si vero illis earumdem effectus cum tabularum ſignis applicentur: vertuntur in *apparentia*. Contra ea, ſiderum obſervata loca apparentia aberrationis nutationisque effectibus inquinata ſunt, quae, ſi ab his effectibus in tabulis exhibitis purgentur et ſignis contrariis applicentur, vertuntur hoc modo in loca *vera*. Nobis itaque loca *vera* et *media* idem ſignificant, quod propter aliorum auctorum mentem probe notandum duximus; a nobis vero denominatio *loci medii* nunquam uſurpatur

Poteſt quantitas aberrationis $\frac{493,''2}{1440'}$. *D. g* ad calculi commoditatem per tabulam exhiberi; ſed cum in praxi moleſtum nimis et faſtidioſum ſit, tabula ex duobus argumentis conflata uti: *Cl. LAMBERT* hanc artificio quodam ad unicum reduxit argumentum, ponendo nimirum:

$$4.\ D.\ g = [(D+g)^2 - (D-g)^2]$$

unde aberratio erit:

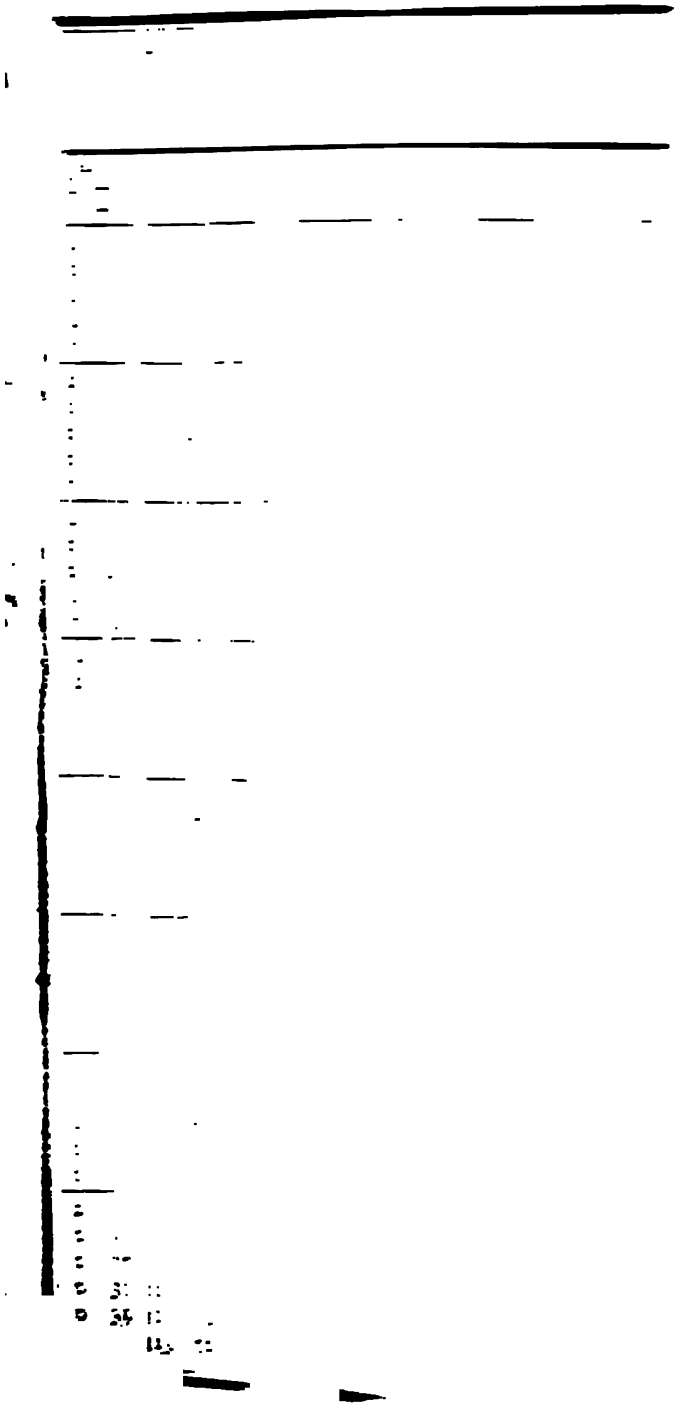
$$\frac{493,''2}{5760'}\ [(D+g)^2 - (D-g)^2]$$

Dedit CL. *LAMBERT* ſecundum hanc formulam tabulam generalem aberrationis in *collectione tabularum aſtronomicarum Reg. ſcient. acad. Berolinenſ.* Tomo III, pag. 162, exprimendo motum geocentricum ſideris ejusdemque diſtantiam a tellure in minutis primis, poſita illa ſolis a terra = 10 Min. Eandem hanc tabulam ſecundum formulam allatam, ad numeros recentiores exaequatam, et calculo ab ovo ſubjectam in calculatorum gratiam ſubjiciemus.

TABVLA GENERALIS

pro aberratione lucis.

Arg. D + g / D − g	Aberratio	Arg. D + g / D − g	Aberratio	Arg. D + g / D − g	Aberratio	Arg. D + g / D − g	Aberratio
0° 0′	0,″00	0° 40′	13,″70	1° 20′	54,″80	2° 0′	123,″30
0 1	0, 01	0 41	14, 39	1 21	56, 18	2 1	125, 36
0 2	0, 03	0 42	15, 10	1 22	57, 58	2 2	127, 44
0 3	0, 08	0 43	15, 83	1 23	58, 99	2 3	129, 54
0 4	0, 14	0 44	16, 58	1 24	60, 42	2 4	131, 66
0 5	0, 22	0 45	17, 34	1 25	61, 86	2 5	133, 79
0 6	0, 31	0 46	18, 12	1 26	63, 33	2 6	135, 94
0 7	0, 42	0 47	18, 91	1 27	64, 81	2 7	138, 11
0 8	0, 55	0 48	19, 72	1 28	66, 31	2 8	140, 29
0 9	0, 70	0 49	20, 56	1 29	67, 82	2 9	142, 49
0 10	0, 86	0 50	21, 41	1 30	69, 36	2 10	144, 71
0 11	1, 03	0 51	22, 27	1 31	70, 91	2 11	146, 94
0 12	1, 23	0 52	23, 15	1 32	72, 47	2 12	149, 19
0 13	1, 45	0 53	24, 05	1 33	74, 05	2 13	151, 46
0 14	1, 68	0 54	24, 97	1 34	75, 66	2 14	153, 75
0 15	1, 93	0 55	25, 90	1 35	77, 28	2 15	156, 05
0 16	2, 19	0 56	26, 85	1 36	78, 91	2 16	158, 37
0 17	2, 47	0 57	27, 82	1 37	80, 56	2 17	160, 71
0 18	2, 77	0 58	28, 80	1 38	82, 23	2 18	163, 06
0 19	3, 09	0 59	29, 80	1 39	83, 92	2 19	165, 43
0 20	3, 42	1 0	30, 82	1 40	85, 62	2 20	167, 82
0 21	3, 77	1 1	31, 86	1 41	87, 35	2 21	170, 23
0 22	4, 14	1 2	32, 91	1 42	89, 09	2 22	172, 65
0 23	4, 53	1 3	33, 98	1 43	90, 84	2 23	175, 10
0 24	4, 93	1 4	35, 07	1 44	92, 61	2 24	177, 56
0 25	5, 35	1 5	36, 18	1 45	94, 40	2 25	180, 03
0 26	5, 79	1 6	37, 30	1 46	96, 21	2 26	182, 52
0 27	6, 24	1 7	38, 44	1 47	98, 03	2 27	185, 03
0 28	6, 71	1 8	39, 59	1 48	98, 87	2 28	187, 55
0 29	7, 20	1 9	40, 77	1 49	101, 73	2 29	190, 10
0 30	7, 71	1 10	41, 96	1 50	103, 61	2 30	192, 66
0 31	8, 23	1 11	43, 16	1 51	105, 50	2 31	195, 24
0 32	8, 77	1 12	44, 39	1 52	107, 41	2 32	197, 83
0 33	9, 32	1 13	45, 63	1 53	109, 33	2 33	200, 44
0 34	9, 90	1 14	46, 89	1 54	111, 28	2 34	203, 07
0 35	10, 49	1 15	48, 16	1 55	113, 24	2 35	205, 71
0 36	11, 10	1 16	49, 46	1 56	115, 22	2 36	208, 38
0 37	11, 72	1 17	50, 77	1 57	117, 21	2 37	211, 06
0 38	12, 36	1 18	52, 09	1 58	119, 22	2 38	213, 76
0 39	13, 02	1 19	53, 44	1 59	121, 25	2 39	216, 47
0 40	13, 70	1 20	54, 80	2 0	123, 30	2 40	219, 20



Sit e. g. aberratio in long. et in latit. cometae anni 1769 die 21 Aug. ex tabula appoſita petenda.

Refert Cl. *PINGRÉ* *) motum diurnum geocentricum hujus cometae in long. fuiſſe $= 1^\circ\ 3' = g$, in latit. $= 25'$, diſtantiam cometae a tellure $= 6,'67 = D$ (quia tabula noſtra, ut ſupra diximus, diſtantiam ſolis a tellure ſupponit $= 10'$). Erit itaque.

Arg. I $= D + g = 1^\circ\ 9,'67$ ex tabula . . .	41,″57
Arg. II $= D - g = 0\ 56, 33$	27, 17
Aberratio in long.	14,″40
Cl. *PINGRÉ* per calculum trigonometr. eandem invenit .	14,″2

Pro latitudine:

Arg. I $= D + g = 31,'67$ ex tabula	8,″59
Arg. II $= D - g = 18, 33$	2, 88
Aberratio in latit.	5,″71
Cl. *PINGRÉ* habet	5,″6

Si diſtantia data ſideris a terra in tabula non habetur, poteris tamen quantitatem aberrationis huic diſtantiae reſpondentem elicere, multiplicando per 4 aberrationem dimidiae diſtantiae *reſpondentem*. Sic pro diſtantia 1° aberratio eſt 30,″82, ergo pro diſtantia $2^\circ = 30,''82 \times 4 = 123,''28$, quae cum tabula congruit. Sit exempli gratia motus geocentricus diurnus in long. cujusdam cometae $= 2^\circ\ 15'$, ejusdem diſtantia a tellure $= 43'$: jam quaeritur aberratio hujus ſideris. Erunt argumenta:

Arg. I $= D + g = 2^\circ\ 58'$
Arg. II $= D - g = 1\ 32$

Sed cum tabula noſtra Arg. I non exhibeat, ſume ejusdem medietatem $1^\circ\ 29'$, et aberratio in tabula reſpondens erit

67,″82 × 4	271,″28
pro Arg. II $= 1^\circ\ 32'$ tabula habet . . .	72, 47
	198,″81
Ergo aberratio quaeſita in long.	$3'\ 18,''81$

Si motus geocentricus in long. $g = 0$, quod tunc evenit, quando planeta fit ſtationarius; aberratio evaneſcit, et nulla eſt.

Sit diſtantia ſideris erratici a ſole $= r$, ejusdem diſtantia a tellure $= \varrho$, diſtantia ſolis a tellure $= R$.

*) *Comètographie*, Tom. II, pag. 258.

Elongatio planetae $=$ long. geocentr. plan. — long. $\odot = E$.

Parallaxis annua plan. $=$ long. helioc. plan. — long. geoc. plan. $= P$.

Commutatio plan. $= 180° - (E + P) = C$.

Latitudo plan. $= \lambda$.

Planetarum vel cometarum aberratio in long. ſemper erit:

$$\frac{20,''255}{\text{cof.}\,\lambda}\left(\text{cof.}\,E + \frac{\sqrt{R}\,\text{cof.}\,P}{\sqrt{r}}\right)$$

Terminus primus hujus formulae non ſolum omnibus planetis ſed etiam omnibus fixis communis eſt; terminus ſecundus vero a quovis planetae motu proprio pendet. Liquet perinde ex formula, ſummam vel differentiam aberrationum in conjunctione et in oppoſitione planetarum cum ſole conſtanter fore $= 40,''51$. Nam cum in utroque caſu coſin. elongationis ∓ 1, et ſecunda pars formulae propter ſigna algebraica contraria plane evaneſcat, ſumma vel differentia aberrationum neceſſario ſemper erit $= 20,''255 \times 2 = 40,''510$.

In conjunctionibus planetarum inferioribus et in oppoſitione planetarum ſuperiorum cum ſole, elongatio ſemper eſt $= 180° = -1$, et parallaxis annua $= 0$. Hinc aberratio in long. erit

$$\frac{20,''255}{\text{cof.}\,\lambda}\left(-1 + \frac{\sqrt{R}}{\sqrt{r}}\right)$$

In ſuperioribus autem conjunctionibus planetarum inferiorum et ſuperiorum aberratio haec erit

$$\frac{20,''255}{\text{cof.}\,\lambda}\left(1 + \frac{\sqrt{R}}{\sqrt{r}}\right)$$

Haec omnia inveſtigata ſunt nulla excentricitatis orbitarum habita ratione, et poſitis diſtantiis a ſole mediis, quam ſuppoſitionem, ſi *Mercurii* et *Martis* orbitam exceperis, ſemper tuto adhibere potes. Sit e. g. effectus aberrationis lucis in conjunctione Veneris ſuperiore et inferiore quaerendus.

Diſtantia media *Veneris* a ſole eſt $= 0,7233323 = r$, poſita illa terrae $= 1 = R$; erit aberratio in conjunctione ſuperiore

$$\frac{20,''255}{\text{cof.}\,\lambda}\left(1 + \frac{\sqrt{R}}{\sqrt{r}}\right) = \frac{20,''255}{\text{cof.}\,\lambda}\left(1 + \frac{1}{\sqrt{0,7233323}}\right) = +44,''0706 : \text{cof.}\,\lambda.$$

Signum praefixum — eſt, quia motus planetae in conjunctionibus ſuperioribus directus eſt.

Pro conjunctione inferiore habemus

$$\frac{20,''255}{\text{cof. }\lambda}\left(-1+\frac{\sqrt{R}}{\sqrt{r}}\right)=\frac{20,''255}{\text{cof.}\lambda}\left(-1+\frac{1}{\sqrt{0,723323}}\right)=+\,3,''5606:\text{cof. }\lambda.$$

Signum + manet, quia motus planetae in conjunctionibus inferioribus retrogradus eſt, ideoque effectus aberrationis loco vero adhibendus erit + 3,″5606 : cof. λ; et ſumma algebraica ambarum aberrationum, ut ſupra diximus, — 44,″0706 + 3,″5606 = 40,″5100.

Propter exiguam planetarum latitudinem cofin. λ non multum ab unitate differt, igitur plerumque negligi poteſt.

Quaeratur effectus aberrationis pro longitudine planetae *Urani* in oppoſitione et in conjunctione cum ſole, cujus diſtantia $r = 19,183305$.

Aberratio in oppoſitione

$$\frac{20,''255}{\text{cof. }\lambda}\left(-1+\frac{\sqrt{R}}{\sqrt{r}}\right)=\frac{20,''255}{\text{cof. }\lambda}\left(-1+\frac{1}{\sqrt{19,183305}}\right)=-\,15,''6304:\text{cof. }\lambda$$

Signum praefixum + eſt, quia motus planetae in oppoſitionibus retrogradus eſt.

Aberratio in conjunctione

$$\frac{20,''255}{\text{cof. }\lambda}\left(1+\frac{\sqrt{R}}{\sqrt{r}}\right)=\frac{20,''255}{\text{cof. }\lambda}\left(1+\frac{1}{\sqrt{19,183305}}\right)=+\,24,''8796:\text{cof. }\lambda.$$

Propter motum planetae directum in conjunctionibus hoc ſignum — ſit; ideoque differentia algebraica (quia *Uranus* planeta ſuperior eſt) — 15,″6304 + 24,″8796 = 40,″5100.

Quantitatem aberrationis in aliis orbitae punctis facile invenies, cum ex ephemeridibus aſtronomicis (e. g. Grenovicenſibus et Berolinenſibus) elongationem et parallaxin annuam in promtu habeas, ubi planetarum loca tum heliocentrica, tum geocentrica exhibentur.

Sit v. g. effectus aberrationis pro longitudine *Urani* die 1 Aug. 1807 ſupputandus.

Ex ephemerid. aſtronom. Berolin. pro hac die eſt long. geocentr. ♅ = 6ˢ 26° 32′, long. ☉ = 4ˢ 8° 12′, ergo elongatio 78° 20′, long. helioc. ♅ = 6ˢ 29° 38′, unde parallaxis annua 3° 6′, latitudo 0° 32′. Hinc terminus primus formulae + 4,″0961, terminus ſecundus + 4,″6180, et aberratio tota + 8,″7141 et quia motus planetae directus eſt, ſignum mutatur, et aberratio adhibenda erit — 8,″7141.

Fit interdum, ut in ephemeridibus aſtronomicis longitudo heliocentrica planetae non habeatur (v. g. in *Ephem. Pariſin. Mediolan.*

Vleimenſibus). Poteris tunc parallaxin annuam ad ſcopum praeſentem ſatis accurate ſupputare, per formulam $\frac{\text{ſin. } E}{r}$. In exemplo *Urani* ſupra allato ſin. elong. 78° 20′ diviſus per diſtantiam 19,183305 dat parallaxin annuam 2° 55′, quam ſupra quidem ex ephem. aſtronom. 3° 6′ invenimus; ſed haec differentia hic nullius eſt momenti, cum nec 0,"0008 aberrationis partem mutet, ut calculum tentanti liquebit.

Qui diſtantiam planetae a terra minus accurate et ad finem noſtrum ſatis ſufficienter noſſe cupit, poterit eandem per formulam ſupputare $\frac{\text{ſin. } C}{\text{ſin. } P}$; e. g. in exemplo cometae ſupra propoſito habet Cl. *PINGRÉ* diſtantiam hujus ſideris a ſole 1,32017, long. ☉ 149° 7′ 43°, long. geoc. cometae = 47° 2′ 3°. Hinc parallaxis annua 47° 47′ 20", commutatio 30° 7′ 0°, et diſtantia cometae a tellure 0,677. Cl. *PINGRÉ* calculo curatiore invenit 0,66695.

Poteris etiam diſtantiam ſideris a terra per ſequentem invenire formulam cof. E + r cof. P, quam calculo peracto invenies = 0,67746.

Qui majorem accurationem deſiderant, ſumant loco diſtantiarum mediarum terrae et planetae a ſole eorumdem radios vectores R' et r', et elongationem E, parallaxin P non in orbita planetae, ſed ad ecliptican reductas, ſcilicet per

$$\text{cof. } E' = \text{cof. } E : \text{cof. lat. helioc.}$$

$$\text{cof. } P' = \text{cof. } P : \text{cof. lat geoc.}$$

et erit diſtantia vera planetae a terra = R′ cof. E′ + r′ cof. P.

In praemiſſis planetarum orbitas aſſumſimus circulares, nulla excentricitatis habita ratione; ſed cum orbitae hae revera ellipticae ſint, propter mutabiles illorum diſtantias a ſole, neceſſario et illorum aberrationis effectus mutari debent. Qui igitur hos effectus ſubtilius indagare cupiunt, per ſequentem formulam ad calculum vocare poterunt, ubi ſemiaxis major orbitae planetae = a, ejusdem excentricitas = e.

Aberratio planetae in longitudinem erit:

$$\frac{8'\ 13.''2}{1^{\text{hora}}}\left\{\text{cof. elong.}\frac{1}{\sqrt{1-ee}}\left(1-e\ \text{cof. anom. verae}\cdot\delta\right)\right\}\text{mot. med. horar.}\cdot\delta +$$

$$+\frac{8'\ 13.''2}{1^{\text{h.}}\ \text{cof. lat. geoc.}}\left\{\text{cof. parall. ann}\frac{a}{\sqrt{aa-ee}}\left(a-e\ \text{cof. an. ver. plan.}\right)\text{cof.}^2\ \text{lat. hel.}\right\}\begin{matrix}\text{mot. med.}\\ \text{hor. plan.}\\ \text{in orbita.}\end{matrix}$$

Pars prima hujus formulae a telluris orbita et ejusdem motu dimno pendet, et omnibus planetis, ut et fixis communis eſt; et cum terreſtris orbitae excentricitas ſit = 0,01679121, et motus horarius medius = 2' 27,"8, abit haec formulae pars in ſequentes numeros:

20,"255 cof. E — 0,"340 cof. E cof. anom. verae ⊙

vel

20,"255 cof. E—0,"170 cof. (E+anom.ver.⊙)—0,"170 cof.(E—an.ver.⊙)

Quoniam vero E = long. ⊙ — long. geoc. planet. et

Anom. vera ⊙ = long. ⊙ — apogaeum ⊙.

Erit: E + anom. vera ⊙ = 2 long. ⊙ — apog. ⊙ — long. geoc. plan. et E — anom. vera ⊙ = apog. ⊙ — long. plan. geoc.

In ſecunda parte formulae, quae ſolum a planetarum orbitis pendet, ſequens ſubſtitutio et transformatio applicari poterit.

Eſt enim:

cof.² latit. hel. = 1 — ſin.² lat. hel. = 1 — ſin.² inclin. orb. ſin.² arg. latit. = = 1 — ½ ſin.² J (1 — cof. 2 arg. latit.) = 1 — ½ ſin.² J — ½ ſin.² J cof. 2 arg. latit.

Subſtituendo et reducendo obtinebimus:

$$\frac{0,13^{m}0000}{\text{cof. lat. geoc.}}\left\{\begin{array}{l} +(1-\tfrac{1}{2}\sin.^2 J)\cos P.\left(\frac{aa}{\sqrt{aa-ee}}\right) \\ -(1-\tfrac{1}{2}\sin.^2 J)\cos. P.\cos.\text{anom. ver.}\left(\frac{ae}{\sqrt{aa-ee}}\right) \\ -\tfrac{1}{2}\left(\frac{aa}{\sqrt{aa-ee}}\right)\cos. P.\sin.^2 J.\cos. 2\text{ arg. latit.} \\ +\tfrac{1}{2}\left(\frac{aa}{\sqrt{aa-ee}}\right)\cos. P.\sin.^2 J\cos. 2\text{ arg. latit.} \end{array}\right\}\text{mot. med. hor. plan. in orbita.}$$

Aſſumtis igitur pro quovis planeta eorumdem orbitarum dimenſionibus et motibus mediis horariis, harum aberrationum effectus generales in longitudinem in numeros redactos ſequentes erunt, in quibus termini ab anomalia vera et ab argum. latit. pendentes, duntaxat in *Mercurio* aliquid momenti, apud ceteros planetas vero omnino negligendi ſunt.

Pro *Mercurio:*

— 20,"255 cof. E — 0,"34 cof. (long. geoc. — apog. ⊙)
— 32,"78 cof. P + 6,"75 cof. (long. geoc. — aphel. plan.)
— 0,"12 cof. (2 arg. lat. ± P)
— 0,"12 cof. (2 arg. lat. ∓ P + VI^{s}).

Pro

Pro *Venere:*

— 20,"255 cof. E — 0,"34 cof. (long. geoc. — apog. ⊙)
— 23,"96 cof. P + 0,"16 cof. (long. geoc. — aphel. plan.)

Pro *Marte:*

— 20,"255 cof. E — 0,"34 cof. (long. geoc. — apog. ⊙)
— 16,"51 cof. P + 1,"52 cof. (long. geoc. — aphel. plan.)

Pro *Cerere:*

— 20,"255 cof. E — 0,"34 cof. (long. geoc. — apog. ⊙)
— 12,"30 cof. P + 0,"34 cof. (long. geoc. — aphel. plan.)

Pro *Pallade:*

— 20,"255 cof. E — 0,"34 cof. (long. geoc. — apog. ⊙)
— 12,"47 cof. P + 1,"07 cof. (long. geoc. — aphel. plan.)

Pro *Junone:*

— 20,"255 cof. E — 0,"34 cof. (long. geoc. — apog. ⊙)
— 12,"66 cof. P + 1,"13 cof. (long. geoc. — aphel. plan.)

Pro *Jove:*

— 20,"255 cof. E — 0,"34 cof. (long. geoc. — apog. ⊙)
— 8,"89 cof. P + 0,"42 cof. (long. geoc. — aphel. plan.)

Pro *Saturno:*

— 20,"255 cof. E — 0,"34 cof. (long. geoc. — apog. ⊙)
— 6,"57 cof. P + 0,"37 cof. (long. geoc. — aphel. plan.)

Pro *Urano:*

— 20,"255 cof. E — 0,"34 cof. (long. geoc. — apog. ⊙)
— 4,"63 cof. P + 0, 21 cof. (long. geoc. — aphel. plan.)

Pro planetarum latitudine formulae generales aberrationum hae erunt.

Aberratio omnibus planetis communis:
= 20,"255 fin. E fin. latit. geoc.

Particularis pro *Mercurio:*

32,"78 fin. P. fin. latit. geoc.
6,"75 fin (long. geoc. — aphel. plan.) fin. latit. geoc.
4,"02 cof. arg. latit.

Pro *Venere*: 23,"96 ſin. P. ſin. latit. geoc.
0, 16 ſin. (long. geoc. — aphel. plan.) ſin. latit. geoc.
1, 42 coſ. arg. latit.

Pro *Marte*: 16,"51 ſin. P. ſin. latit. geoc.
1, 52 ſin. (long. geoc. — aphel. plan.) ſin. latit. geoc.
0, 53 coſ. arg. latit.

Pro *Cerere*: 12,"30 ſin. P. latit. geoc.
0, 34 ſin. (long. geoc. — aphel. plan.) ſin. latit. geoc.
2, 31 coſ. arg. latit.

Pro *Pallade*: 12,"47 ſin. P. ſin. latit. geoc.
1, 07 ſin. (long. geoc. — aphel. plan.) ſin. latit. geoc.
8, 61 coſ. arg. latit.

Pro *Junone*: 12,"66 ſin. P. ſin. latit. geoc.
1, 13 ſin. (long. geoc. — aphel. plan.) ſin. latit. geoc.
2, 94 coſ. arg. latit.

Pro *Jove*: 8,"89 ſin. P. ſin. latit. geoc.
0, 42 ſin. (long. geoc. — aphel. plan.) ſin. latit. geoc.
0, 20 coſ. arg. latit.

Pro *Saturno*: 6,"57 ſin. P. ſin. latit. geoc.
0, 37 ſin. (long. geoc. — aphel. plan.) ſin. latit. geoc.
0, 29 coſ. arg. latit.

Pro *Urano*: 4,"63 ſin. P. ſin. latit. geoc.
0, 21 ſin. (long. geoc. — aphel. plan.) ſin. latit. geoc.
0, 06 coſ. arg. latit.

Dedit Cl. *DELAMBRE* planetarum tabulas aberrationum ſpeciales in *Ephemerides des mouvemens céleſtes etc. tome VIII*, pag. CI et pag. 73, in iisdem Ephemeridibus tomo IX, pag. 234 et in *Conn. des tems, année 1794*, pag. 206. Sed cum hae, exceptis recentiorum planetarum tabulis, ad congeriem XXXII, et cum illis, ad acervum XLIV tabularum exſurgant: adnitendum duxi, ut ad majus redigerentur compendium, quod et logarithmorum conſtantium ope, et pauciſſimis tabulis hic exhibitis ſequente praeſtiti modo.

TABVLAE GENERALES

ad ſupputandos aberrationis lucis effectus in planetarum longitudinem et latitudinem.

TABVLA I.

Grad.	O^s — VI^s +	I^s — VII^s +	II^s — VIII^s +	Grad
0°	20,″26	17,″54	10,″13	30°
1	20, 25	17, 36	9, 82	29
2	20, 24	17, 18	9, 51	28
3	20, 23	16, 99	9, 20	27
4	20, 21	16, 79	8, 88	26
5	20, 18	16, 59	8, 56	25
6	20, 14	16, 39	8, 24	24
7	20, 10	16, 18	7, 91	23
8	20, 06	15, 96	7, 59	22
9	20, 01	15, 74	7, 26	21
10	19, 95	15, 52	6, 93	20
11	19, 88	15, 29	6, 59	19
12	19, 81	15, 05	6, 26	18
13	19, 74	14, 81	5, 92	17
14	19, 65	14, 57	5, 58	16
15	19, 56	14, 32	5, 24	15
16	19, 47	14, 07	4, 90	14
17	19, 37	13, 81	4, 56	13
18	19, 26	13, 55	4, 21	12
19	19, 15	13, 29	3, 87	11
20	19, 03	13, 02	3, 52	10
21	18, 91	12, 75	3, 17	9
22	18, 78	12, 47	2, 82	8
23	18, 64	12, 19	2, 47	7
24	18, 50	11, 91	2, 12	6
25	18, 36	11, 62	1, 77	5
26	18, 21	11, 33	1, 41	4
27	18, 05	11, 03	1, 06	3
28	17, 88	10, 73	0, 71	2
29	17, 71	10, 43	0, 35	1
30	17, 54	10, 13	0, 00	0
Grad.	— XI^s + V^s	— X^s + IV^s	— IX^s + III^s	Grad.

TABVLA II.

Grad.	O^s + VI^s —	I^s + VII^s —	II^s + VIII^s —	Grad.
0°	0,″34	0,″29	0,″16	30°
5	0, 33	0, 27	0, 14	25
10	0, 33	0, 25	0, 11	20
15	0, 32	0, 23	0, 08	15
20	0, 31	0, 21	0, 06	10
25	0, 30	0, 19	0, 03	5
30	0, 29	0, 16	0, 00	0
Grad.	+ XI^s — V^s	+ X^s — IV^s	+ IX^s — III^s	Grad.

TABVLA III.

Termini conſtantes pro aberratione in latitudinem ſemper adhibendi.

Signum — indicat motum ad auſtrum.

Pro	*Mercurio* . .	— 0,″71
	Venere . . .	— 0, 01
	Marte . . .	— 0, 01
	Cerere . . .	— 0, 01
	Pallade . . .	— 0, 01
	Junone . . .	— 0, 02
	Jove	0, 00
	Saturno . .	— 0, 01
	Urano . . .	0, 00

TABVLA IV.

Logarithmi conſtantes ad ſupputandum aberrationis effectum in longitudinem et in latitudinem.

Nomina Planetarum	Logarithmi conſtantes pro longitudine et latitudine		Log. conſt. pro longitud.	Log. conſt. pro latitud.
	A.	B.	C.	D.
Pro *Mercurio*	0, 2090472	9, 5227716	7, 7726491	9, 2981910
Venere	0, 0729170	7, 8975878	. . .	8, 8458934
Marte	9, 9110786	8, 8753114	. . .	8, 4202787
Cerere	9, 7831963	8, 2249467	. . .	9, 0564642
Pallade	9, 7893095	8, 7228516	. . .	9, 6283728
Junone	9, 7957281	8, 7465462	. . .	9, 1610900
Jove	9, 6422257	8, 3167171	. . .	8, 0038386
Saturno	9, 5108546	8, 2616695	. . .	8, 1507061
Urano	9, 3587955	8, 0156871	. . .	7, 4884415

Reſtat nunc, tabularum et logarithmorum uſum *breviter* ut exponam.

Problema I.

Sit effectus aberrationis lucis planetae in longitudinem ex tabulis his ſupputandus.

1) Cum argumento E = elongat. planet. = (long. geoc. plan. — long. ☉) exquire e tabula I numerum reſpondentem cum ſuo ſigno.

2) Cum argumento (long. geoc. plan. — long. apog. ☉) quaere numerum competentem e tabula II. Hi duo numeri dabunt ſemper aberrationis partem, omnibus planetis communem.

3) Cum argumento P = parallaxi annuae planetarum = (long. helioc. plan. — long. geoc. plan.) carpe e tabula I numerum convenientem cum ſigno; cujus logarithmum adde ad logarithmum conſtantem A, tabulae IV, cuivis planetae appoſitum, cujus aberratio quaeritur. Numerus naturalis logarithmorum ſummae exit pars prima aberrationis particularis planetae.

4) Cum argumento (long. geoc. plan. — long. aphel. plan.) ingredere iterum tabulam I, cujus numeri logarithmum adde ad logarithmum conſtantem B. Numerus naturalis ſummae exit pars ſecun-

da aberrationis particularis planetae, praefixo ſigno tabulae contrario. Haec pars in planeta *Mercurio* ad 6,″8, in *Marte* ad 1,″5, in *Pallade* et in *Junone* ad 1,″1, in aliis vero planetis nunquam ad 0,″5 aſſurgit.

5) Cum duobus argumentis (duplo argumento latit. $\pm$ P) et (duplo argum. latit. $\mp$ P $+$ VI^s) ſume in tabula I denuo numeros reſpondentes, qui in unam ſummam algebraicam conflati, et ad logarithmum conſtantem C additi, dabunt partem tertiam aberrationis particularis planetae ſignis ſuperioribus, ſi planeta ad orientem, ſignis inferioribus, ſi ad occidentem verſatur. Sed haec aberrationis particula tantummodo in planeta *Mercurio* locum habet, tutoque negligi poterit, cum nunquam partem 0,″24 excedat.

6) Omnes hi quatuor numeri in unum aggregatum, prout eorumdem ſigna imperant, conflati, et in ſecantem latitudinis geocentricae planetae ducti, vel per ejusdem coſinum diviſi, dabunt omnem aberrationis planetae effectum.

Exemplum. I.

Sit effectus aberrationis planetae *Mercurii* ex tabulis his, et cum logarithmis auxiliaribus pro die 4 Septembris 1778 hora 1 min. 56 ſupputandus.

Pro hoc tempore eſt:

Elongatio planetae orient.	$=$	0^s	26,″8	$=$ E
Long. geoc. planetae . .	$=$	6	8, 8	$=$ G
Long. apog. ſolis . . .	$=$	3	9, 2	$=$ A
Long. aphel. planetae .	$=$	8	14, 1	$=$ Φ
Parallaxis annua planetae.	$=$	2	20, 6	$=$ P
Argumentum latitud. plan.	$\mp$	7	14, 0	$=$ L
Latitud. geoc. plan. auſtr.	$=$	0	2, 3	$=$ λ

Tab. I cum arg. E $=$ 0^s 26,″8 . . . . . — 18,″08
Tab. II cum arg. (G — A) $=$ 2 29,″6 . . . . . + 0, ∞

Pars omnibus planetis communis . . . . . — 18,″08

Tab. I cum arg. P $=$ 2^s 20,″6 . . — 3,″31 Log. $=$ 0,5198280
Log. conſt. A $=$ 0,2090472

Log. $=$ 0,7288752 $=$ — 5,″36 Pars I.

Tab. I cum arg. (G—Φ) $=$ 9^s 24,″7 — 8,″46 Log. $=$ 0,9273704
Log. conſt. B $=$ 9,5227716

Log. $=$ 0,4501420 $=$ + 2,″82 Pars II.

Tab. I cum arg. $(2L+P) = 5^s\ 18,''6 \ldots + 19,''85$
Tab. I cum arg. $(2L-P+VI^s) = 6^s\ 7,''4 + 20,08$

Summa $+ 39,''93$ Log. $= 1,6012993$
Log. conſt. C $= 7,7726491$

Log. $= 9,3739484 = + 0,''24$ P.III

Summa omn. part. algebr. $= -20,''38$
Log. $20,''38 = 1,3092042$
Log. coſ. $\lambda = 9,9996500$

Log. $= 1,3095542 = -20,''40 =$
aberrat. tota ♀ in longitud.

Cl. *DELAMBRE* per tabulas ſuas ſpeciales (*Conn. des tems année 1794*, pag. 221) invenit — 20,″15, ſed illi aberratio ſolis = 20,″0, nobis vero = 20,″255 eſt; hinc differentia inter utrumque calculum prorſus nulla.

Exemplum. II.

Quaeratur aberratio in longitudinem *Veneris* die 23 Jun. 1690 $1^h\ 27'\ 31''$ t. m. Pariſ. Exemplum hoc in tabulis aſtronomicis Cl. *DE LA LANDE*, pag. 123 refertur.

Elementa calculi ibidem ſunt:

E =	0^s	17,″6	
G =	3	19, 9	Tab. I cum arg. E $= 0^s\ 17,''6 \ldots - 19,''30$
A =	3	7, 9	Tab. II cum arg. $(G-A) = 0^s\ 12,''0 \ldots + 0,33$
φ =	10	7, 1	Pars omnibus planetis communis $\ldots - 18,''97$
P =	0	25, 5	
λ =	0	1, 6	

Tab. I cum arg. P $= 0^s\ 25,''5 \ldots - 18,''28$ Log. $= 1,2619762$
Log. conſt. A $= 0,0729170$

Log. $= 1,3348932 = -21,''62$ Pars I.

Tab. I cum arg. $(G-\varphi) = 5^s\ 12,''8 + 19,''35$ Log. $= 1,2866810$
Log. conſt. B $= 7,8975878$

Log. $= 9,1842688 = -0,''15$ Pars II.

Summa omnium part. algebr. $= -40,''74$

Log. $40,''74 = 1,6100210$
Log. coſ. $\lambda = 9,9998882$

Log. $= 1,6101328 = -40,''74 =$
aberratio tota ♀ in longit.

Cl. *DE LA LANDE* l. c. pag. 129 invenit hunc effectum = 38", ſed juſto minorem, quod et per formulam pag. 189 allatam demonſtrari poteſt. Eſt enim effectus aberrationis

$$\frac{20,''255}{\text{cof. }\lambda}\left(\text{cof. E} + \frac{\sqrt{R}\,\text{cof. P}}{\sqrt{r}}\right)$$

Log. R = 0,007202; $\sqrt{R}$ = 0,003601 Log. 20,"255 = 1,3065322
Log. r = 9,855759; $\sqrt{r}$ = 9,927880 Log. cof. λ = 9,9998882

$\frac{\sqrt{R}}{\sqrt{r}}$ = 0,075721 Log. = 1,3066440

Log. cof. P = 9,955488
Log. $\frac{20,''255}{\text{cof. }\lambda}$ = 1,306644
Log. = 1,337853 = + 21,"77

Log. cof. E = 9,9791798
Log. $\frac{20,''255}{\text{cof. }\lambda}$ = 1,3066440
Log. = 1,2858238 = + 19,"31

Summa − 41,"08 = aberratio tota ♀ in long.

Itaque effectus aberrationis a Cl. *DE LA LANDE* ſupputatus 3" aequo minor eſt.

Problema II.

Sit effectus aberrationis lucis planetarum in latitudinem ex tabulis his ſupputandus.

1) Cum argumento E + III^s carpe e tabula I numerum, qui huic argumento reſpondet; cujus logarithmum adde ad logarithmum ſinus latitudinis geocentricae. In latitudine geocentrica boreali ſignum adhibendum erit +, ſi elongatio orientalis; ſignum —, ſi occidentalis eſt. Contrarium habet locum, ſi latitudo geocentrica auſtralis eſt. Haec aberrationis pars in latitudinem omnibus planetis communis eſt.

2) Cum argumento P + III^s ingredere iterum tabulam I; adde ad logarithmum numeri inventi logarithmum conſtantem A tabulae IV, et logarithmum ſinus latitudinis geocentricae. Numerus naturalis erit pars prima effectus aberrationis particularis in latitudinem, ſemper cum ſigno notae partis communis (1) contrario adhibenda.

3) Cum argumento (G — ☉ + III^s) exquire e tabula I numerum, cujus logarithmus ad logarithmum conſtantem B et ad logarithmum ſinus latitudinis geocentricae planetae additus, dabit numerum naturalem partis ſecundae effectus aberrationis particularis. Si latit. geoc.

borealis, quantitas ſemper negativa eſt in ſex ſignis III, IV, V, VI, VII, VIII, et poſitiva in ceteris ſex ſignis, ſcilicet O, I, II, IX, X, XI. Contrarium habet locum, ſi latit. geoc. auſtralis eſt.

4) Cum argumento L exquire e tabula I numerum, cujus logarithmus ad logarithmum conſtantem D additus dabit partem tertiam aberrationis tabulae ſignis notandam.

5) Omnes hi quatuor numeri, cum termino conſtante tabulae III et cum ſuis ſignis in unam ſummam algebraicam congeſti, et per coſinum latitudinis geocentricae diviſi, dabunt totum aberrationis effectum in latitudinem.

Effectus particularis aberrationis lucis in aliquorum planetarum latitudinibus perexigui ſunt, exempli gratia in planeta *Jove*, *Saturno*, *Urano*; ideoque plerumque negligi poterunt, cum nunquam ne ad dimidii quidem minuti ſecundi partem aſſurgant. In ceteris vero planetis majoris jam momenti ſunt, et ad plura minuta ſecunda, in hodierna aſtronomia practica non contemnenda, increſcere poſſunt.

Exemplum.

Sit effectus aberrationis lucis in latitud. pro planeta *Mercurio* in exemplo ſupra allato ſupputandus.

Tab. I cum arg. (E+III^s) = 3^s 26,°8 — 9,"14 Log. = 0,9609462
Log. ſin. λ = 8.6034886
Log. = 9.5644348 = — 0,"37 P. com.

Tab. I cum arg. (P+III) = 5^s 20,°6 +19,"99 Log. = 1,3008128
Log. conſt. A = 0,2090672
Log. ſin. λ = 8,6034886
Log. = 0,1133486 = + 1,"30 Pars I.

Tab. I cum arg. (G−Φ=III^s) = 0^s 24,°7 − 18,°40 L. = 1,2648178
Log. conſt. B = 9,5227716
Log. ſin. λ = 8,6034886
Log. = 9,3910780 = — 0,"25 Pars II

Tab. I cum arg. L = 7^s 14,°0 . . . + 14,"57 Log. = 1,1634596
Log. conſt. D = 9,2981910
Log. = 0,4616506 = + 2,"90 Pars III

Tab. III terminus conſtans pro *Mercurio* . . . . . — 0,"71

Summa omn. part. algebr. = + 2,"87

Log. 2,"87 = 0,4578819
Log. coſ. λ = 9,9996500
Log. = 0,4582319 = + 2,"87 = aberratio tota ♀ in latitud. ad boream.

Cl. *DELAMBRE* eundem effectum invenit + 3,°093, a noſtro, ſpectata, quam ſupra innuimus, ratione, non diverſa.

Qui

Qui maxima non egent accuratione, poterunt compendiariis uti formulis, quas ob commodum earum uſum hic adjiciemus. Supponunt, et terram et planetam in diſtantiis verſari mediis. Error maximus inde pertimeſcendus, pro *Mercurio* ad 6″, pro *Marte*, *Pallade*, et *Junone* raro ad 1″, et pro ceteris planetis nunquam ultra fractionem unius minuti ſecundi aſſurgit.

Pro *Mercurio* $= \alpha + \frac{6}{10}\alpha + \frac{3}{100}\alpha = \beta$

Venere $= \alpha + \frac{1}{7}\alpha + \frac{4}{100}\alpha = \beta$

Marte $= \alpha - (\frac{1}{7}\alpha + \frac{4}{100}\alpha) = \beta$

Cerere $= \alpha - (\frac{4}{10}\alpha - \frac{1}{100}\alpha) = \beta$

Pallade $= \alpha - (\frac{4}{10}\alpha - \frac{1}{00}\alpha) = \beta$

Junone $= \alpha - (\frac{4}{10}\alpha - \frac{1}{40}\alpha) = \beta$

Jove $= \alpha - (\frac{1}{2}\alpha + \frac{6}{100}\alpha) = \beta$

Saturno $= \alpha - (\frac{7}{10}\alpha + \frac{3}{100}\alpha) = \beta$

Urano $= \alpha - (\frac{8}{10}\alpha + \frac{3}{100}\alpha) = \beta$

1) Sit α numerus, ex tabula generali I cum argumento parallaxis annuae $=$ P excerptus. Accipe partem hujus numeri aliquotam, prout formula docet, $= \beta$.

2) Cum argumento elongationis $=$ E, ingredere eandem tabulam I, et exquire numerum reſpondentem γ.

3) Omnis effectus aberrationis lucis planetae, cujus argumentis et formula uſus eris, tunc erit $= \beta \pm \gamma$.

Sit in exemplis *Mercurii* et *Veneris*, ſupra allatis, effectus aberrationis hac methodo ſupputandus.

Exemplum I pro Mercurio.

Tab. I

cum arg. P $= 2^s\ 20,^\circ 6 = -3,''31 = \alpha$
$-1,99 = \frac{6}{10}\alpha$
$-0,07 = \frac{3}{100}\alpha$
$-5,37 = \beta$

Tab. I

cum arg. E $= 0^s\ 26,^\circ 8 = -18,08 = \gamma$
Effect. aberr. in long. $= -23,''45$
ſupra hunc invenim. $= -20,40$
Error . . . . . $3,''05$

Exemplum II pro Venere.

Tab. I

cum arg. P $= 0^s\ 25,^\circ 5 = -18,''28 = \alpha$
$-2,61 = \frac{1}{7}\alpha$
$-0,73 = \frac{4}{100}\alpha$
$-21,62 = \beta$

Tab. I

cum arg. E $= 0^s\ 17^\circ,6 = -19,30 = \gamma$
Effect. aberr. in long. $= -40,''92$
ſupra hunc invenim. $= -40,74$
Error . . . . . $0,''18$

Poteris adhuc alio (ſi minutorum ſecundorum fractiones non curas) uti calculi compendio, in quo unicum argumentum, elonga-

tionem planetae nosse sufficit. **Ea tabulam generalem A, pro planetis superioribus.**

Cum argumento *E* exquire numerum competentem e tab. A; adde numerum constantem in tab. D cuivis planetae appositum. Summa algebraica erit effectus aberrationis actualis.

Pro planeta *Marte* applicanda adhuc est correctiuncula in tabulo B expositа, semper cum signo + adhibenda.

Pro planeta *Venere* uti poteris tabula C, in qua error maximus metuendus 2″ non superat.

Pro planeta *Mercurio* nullam addere tabulam placuit, cum error 10″ et ultra timendus sit. Ideo tutius ad methodos supra expositas recurretur.

Tab. A.

Arg. Elong.	Aberratio	Arg. Elong.
0° 0°	— 24,″8	12° 0°
10	24, 5	20
20	23, 6	10
1 0	22, 1	11 0
10	20, 1	20
20	17, 6	10
2 0	14, 8	10 0
10	11, 6	20
20	8, 3	10
3 0	4, 8	9 0
10	— 1, 3	20
20	+ 2, 0	10
4 0	5, 2	8 0
10	8, 1	20
20	10, 5	10
5 0	12, 5	7 0
10	14, 0	20
20	14, 9	10
6 0	+ 15, 2	6 0

Tab. B.

Arg. Elong.	0 6 +	1 11 +	2 10 +	Arg. Elong.
0°	0,″0	0,″9	2,″8	30°
10	0, 2	1, 8	3, 4	20
20	0, 6	2, 3	3, 8	10
30	0, 9	2, 8	3, 9	0
	+ 5	+ 4	+ 3	
	5	8	9	

Tab. C.
Pro planeta *Venere*.

Arg. Elong.	Pars orbitae superior	Pars orbitae inferior
0° 0°	— 44,″8	+ 4,″2
2	44, 0	4, 2
4	43, 9	4, 2
6	43, 7	4, 1
8	43, 5	4, 0
10	43, 2	3, 9
12	42, 7	3, 7
14	42, 1	3, 5
16	41, 5	3, 2
18	40, 9	2, 8
20	40, 1	2, 5
22	39, 3	2, 2
24	38, 4	1, 8
26	37, 4	+ 0, 9
28	36, 2	— 0, 1
30	34, 9	1, 1
32	33, 5	1, 7
34	32, 0	2, 4
36	30, 4	3, 2
38	28, 7	4, 2
40	26, 7	5, 3
42	24, 5	6, 7
44	21, 9	8, 7
45	19, 3	9, 9
46° 20′	15, 8	11, 4
	14, 5	12, 5

Tab. D.

Numeri constantes	
Pro *Marte* =	— 12,″0
Cerere =	— 7, 7
Pallade =	— 7, 0
Junone =	— 8, 1
Jove =	— 4, 3
Saturno =	— 2, 0
Urano =	— 0, 0

Exempla;

1) Pro *Marte*. Sit Elongatio = 2° 20°
In tabula A . . . . — 8,″3
Numer. constans . . — 12, 0
Summa . . . . . — 20, 3
Correct. tab. B. . . + 3, 8
Aberratio quaesita = — 16,″5

2) Pro *Saturno*. Sit Elongatio = 6° 3°
In tabula A . . . + 15,″1
Numerus constans . — 2, 0
Aberratio quaesita . + 13,″1

3) Pro *Venere*. Sit Elongatio = 17° 38,′7
In tab. C Aberrat. = — 41,″0, ut supra.

Tradunt Cl. *MASKELYNE* *) et Cl. *DU SÉJOUR* **) adhuc aliam planetarum aberrationem definiendi methodum, mutando ob-

*) Tables for computing etc. by *Nevil Maskelyne*, pag. VII.

**) Traité analytique des mouvemens apparens des corps célestes; par Mr. *Dionys du Séjour*. Paris, 1789. Tom. II, pag. 411, §. 62ar.

ſervationis momentum. Calculetur nempe pro diſtantia planetae a tellure tempus, quo lumen ab illo ad hanc pervenit in ratione 8' 13," 2 pro diſtantia = 1, id eſt — 493," 2 × diſt. plan. a ☉; auferatur hoc temporis intervallum a tempore vero obſervato; tunc locus verus planetae ab aberratione purgatus idem erit cum apparenti pro hoc temporis momento reducto. Locus igitur planetae obſervatus ab hoc lucis effectu liberatur, mutando tempus obſervationis; et vice verſa ad calculandum locum apparentem ſideris ex tabulis aſtronomicis juvabit locum verum pro tempore hoc reducto calculaſſe. Sed hac methodo tantummodo haec aberrationis pars tollitur, quae a planetae motu proprio pendet, illa vero pars, quae a telluris motu provenit, ut ſupra pag. 189 jam oſtendimus, planetis, ut omnibus fixis communis eſt.

De parallaxi et diametro planetarum.

Si aſtronomi planetarum motus e centro terrae obſervarent: illorum loca ad idem coeli punctum referrent. Cum autem non e centro, ſed ex ſuperficie terrae obſervationes inſtituant: ſinguli motus eosdem non in eodem cernunt loco. Nam ex opticis elementis demonſtratur, objectum ex duobus punctis viſum in diverſis apparere locis; differentiam vero locorum apparentium *parallaxi* definiri. Eſt ergo *parallaxis* ſeu *angulus parallacticus* differentia locorum, in quibus planeta e centro terrae et ejus ſuperficie viſus apparet; ſeu angulus, ſub quo radius terrae ex planeta ſpectatur, qui etiam nomine *parallaxis diurnae* inſignitur, ut a *parallaxi annua* diſtinguatur, qui angulus eſt, ſub quo ſemidiameter orbitae telluris ex aſtro ſpectatur.

Ex aſtronomiae principiis patet, altitudinem planetae, ſupra horizontem e centro terrae viſi, parallaxi minui. Quoniam itaque planetarum altitudines parallaxi mutantur, neceſſario et illorum aſcenſiones rectae, declinationes, longitudines et latitudines mutari debent. Cum vero in volumine hoc ea tantum congeſſerimus, quae ad aſtrorum in ipſo meridiano verſantium obſervationes calculandas aut neceſſaria aut percommoda ſunt: de *parallaxi altitudinis* nobis ſolum ſermo erit.

Sinus diſtantiae a vertice, ſeu coſinus altitudinis ſideris, diviſus per diſtantiam ejusdem a tellure, poſito radio terrae = 1, parallaxis eſt, quae *parallaxis altitudinis* dicitur. Parallaxis haec itaque erit eo

major, quo minor eſt diſtantia planetae a vertice, ſeu quo major eſt ejus altitudo; ergo ſupra horizontem obſervatoris in vertice parallaxis eſt nulla, in horizonte maxima, quae ſingulari nomine *parallaxis horizontalis* diſtinguitur. Patet porro ex praedictis, decreſcere parallaxin, decreſcente diſtantia planetae a terra, et parallaxes horizontales eſſe in ratione inverſa harum diſtantiarum. Hinc cognita unius planetae horizontali parallaxi, invenietur haec alterius; idem habet locum in parallaxibus altitudinum, quando planetae in eadem cenſentur altitudine. Ratio itaque parallaxium horizontalium, vel aequalium altitudinum eſt ipſa ratio diſtantiarum planetarum a terra. Hinc cognita e. g. parallaxi horizontali terrae ſeu ſolis $= 8,''7$, et poſita diſtantia media $= 1$, erit parallaxis horizontalis cujusvis planetae $= \frac{8,''7}{\text{Diſt. plan. a } \odot}$ et parallaxis pro quavis planetae altitudine erit $=$ parall. horiz. $\times$ cof. altit. appar. $=$ parall. horiz. $\times$ ſin. diſt. avert. appar.

Sed haec omnia accepta ſunt poſita figura terrae ſphaerica, et poſita diſtantia media ſolis a tellure $= 1$. Sed cum telluris et planetarum orbitae ellipticae et figura terrae oblata ſint: neceſſario aliquam mutationem in parallaxin inferre debent. Ex *inquiſitionibus* vero de figura telluris inſtitutis colligere licet, illam plerumque pro ſphaerica haberi poſſe, quoniam in remotiorum planetarum parallaxin nullum, in propinquiorem lunam dumtaxat aliquem effectum notatu dignum ingerere poteſt. Quod lunae parallaxin attinet, hanc hoc loco praetermittemus, cum in tabulis lunaribus inprimis in illis Cl. *BÜRG*, a Cl. *DELAMBRE* nuper editis, huic negotio omni ex parte ampliſſime conſultum ſit. Qui autem planetarum orbitarum ellipticitatis rationem habere volunt, utantur tantummodo diſtantia vera planetae a tellure e tabulis aſtronomicis ſupputata. Eſt enim illa, ut notum eſt, pro quovis planeta $= \frac{\text{diſtant. curtat.} \times \text{ſin. commut.}}{\text{ſin. elong.} \times \text{cof. latit. geoc.}}$, vel ad ſcopum noſtrum ſufficienter $= \frac{\text{diſtant. curtat.} \times \text{ſin. latit. helioc.}}{\text{ſin. latit. geoc.}}$

Diſtantia vero curtata planetae a ſole ſemper eſt

$=$ Rad. vect. ellipt. $\times$ cof. latit. helioc.

Planetarum igitur parallaxis horizontalis poterit poni

$= \frac{8,''7}{\text{diſt. curt. ſin. lat. hel. coſec. lat. geoc.}} = \frac{8,''7 \text{ ſin. lat. geoc.}}{\text{diſt. curt. ſin. latit. hel.}}$.

Planetarum diametri apparentes ſunt in ratione inverſa diſtantiarum; hinc eorumdem parallaxes, ut diametri, ſemper in eadem augentur ratione.

Si itaque diameter planetae in diſtantia media a ſole $= D$: ejusdem diameter pro quavis alia diſtantia erit $\frac{D}{\text{diſt. plan. a } \odot} = \delta$, et vice verſa $\delta \times$ diſt. plan. a $\odot = D$.

Cognita itaque parallaxi planetae horizontali, ejusdem diameter apparens a tellure viſa erit $= \frac{\text{parall. hor.} \times D}{8,''7}$. Poteris factorem $\frac{\frac{1}{2}D}{8,''7}$ pro quovis planeta ſupputare, et habebis in promtu numerum conſtantem, quocum parallaxis horizontalis planetae multiplicata mox ejusdem ſemidiametrum exhibebit; et vice verſa ſemidiameter apparens planetae, diviſa per hunc numerum conſtantem, dabit parallaxin horizontalem.

Planetarum diametri apparentes propter exiguam earumdem amplitudinem ſubtiliſſimae et difficillimae ſunt indaginis. Quae recentiſſimorum aſtronomorum conatibus adhuc exploratae ſunt certiſſimae, *) praeſens elenchus exhibet.

Planetarum diametri apparentes.

Nomina Planetarum	In diſt. med. plan. a ſole vel a terra	In diſt. med. terrae a ſole	Logarithmus conſt. $\frac{\frac{1}{2}D}{8,''7}$
Mercurius	. . . .	6,''01	9, 5383252
Venus	. . . .	16, 00	9, 9635707
Mars	5,''907	9, 00	9, 7136932
Jupiter	35, 383	184, 09	1, 0244804
Saturnus	15, 611	148, 91	0, 9323740
Uranus	3, 906	74, 93	0, 6341099

Quid dicam de noviſſimorum planetarum diametris? Sidera haec parviſſima, obſervatu difficillima, vix inſtar fixae octavae vel nonae magnitudinis organis noſtris conſuetis, a plerisque aſtronomis uſur-

*) Ephemerides aſtronom. Berolinenſ. ad annum 1803, pag. 162; ad annum 1807, pag. 164. Supplementum in has ephemer. Vol. II. pag. 5.

patis cernuntur, ter felicibus, ſi tubo obſcurato ſiderculum discernere et punctum, non diametrum, obſervare valent. Interea Cl. *SCHRÖTER* *) majoribus ſuis teleſcopiis catoptricis et micrometris projectoriis, planetunculis his in diſtantia media telluris a ſole ſequentes tribuit diametros apparentes: *Cereri* = 3,"482, *Palladi* = 4,"504, *Junoni* = 3,"057.

Planetuncula vero noviſſima a Cl. *OLBERS* nuperrime die 29 Martii 1807 detecta, omnium aſteroïdum lucidiſſima inſtar fixae magnitudinis quintae micat. Quid de novo hoc ſidere, dum opus hoc prelum relinquit, invento ſentiendum, obſervationes et calculi futuri pronunciabunt.

Majoris momenti ſunt planetarum harum parallaxes, per regulas ſupra traditas definiendae. Sed cum illarum orbitarum elementa ſub incude indefeſſi et eximii geometrae Cl. *GAUSS* adhuc verſentur: futuris correctionibus ſubmittentur. Interea parallaxis horizontalis maxima planetarum harum, in perihelio verſantium, in *Cerere* nunquam 9", in *Pallade* et *Junone* nunquam 5" ſuperat.

En effectus hos in laterculo ſequenti uno ſub *conſpectu*.

Arg. Elong.	Parallaxis.			Arg. Elong.
	in aphel.	in diſt. med.	in perih.	
Sign.	*Cereris*			Sign.
O	1,"912	2,"309	2,"916	O
VI	3, 411	4, 922	8, 842	VI
Sign.	*Palladis.*			Sign.
O	2,"294	2,"309	2,"324	O
VI	4, 855	4, 922	4, 991	VI
Sign.	*Junonis.*			Sign.
O	2,"356	2,"372	2,"389	O
VI	5, 140	5, 218	5, 300	VI

*) Lilienthaliſche Beobachtungen der neu entdeckten Planeten *Ceres*, *Pallas* und *Juno*, zur genauen und richtigen Kenntniſs ihrer wahren Gröſsen etc. von Dr. *Johann Hieronymus Schröter*. Mit zwey Kupfertafeln. Göttingen, 1805.

Sit e. g. pro obſervatione Veneris die 23 Junii 1690 ſtylo novo Grenovici inſtituta, et in tabulis aſtronomicis Cl. *DE LA LANDE* pag. 130 relata, parallaxis horizontalis Veneris et ejusdem diameter apparens ſupputanda.

Logarithmus diſtantiae curtatae ibidem habetur, 9,8557590, latitudo heliocentrica 2° 58′ 51″ et latit. geocentr. 1° 29′ 26″. Secundum noſtram formulam habemus

Log. 8.″7	= 0,9395193	
Log. ſin. lat. geoc.	= 8,4151765	
Compl. arithm. log. diſt. curt.	= 0,1442410	
Compl. arithm. log. ſin. lat. hel.	= 1,2839809	
Log. parall. hor.	= 0,7829177	= 6.″06 = parall. hor.
Log. conſt. $\frac{\frac{1}{2}\,D}{8.''7}$	= 9,9635707	
Log. ſemi-diam.	= 0,7464884	= 5″578 = ſemi-diamet. ♀.
		11.″156 = diamet. ♀.

Cl. *DE LA LANDE* invenit pro parallaxi horizontali, 5.″9 et pro diametro 10.″2; ſed illi parallaxis media ſolis 8.″6 et diameter in diſtantia media 16.″5 eſt.

Qui unius vel alterius minuti ſecundi jacturam non curant, poterunt expeditius parallaxes et diametros ex ſequentibus depromere tabulis.

TABVLA
PARALLAXIS ET SEMIDIAMETRI PLANETARVM.

Argumentum: Longitudo solis — longit. geoc. planetae.

MERCVRII.

Argumentum	PARALLAXIS ☿ in aphel.	PARALLAXIS in diff. media	PARALLAXIS in perihelio	☉ diam. in diff. med.
♂ superior				
0° 0′	5,″93	6,″27	6,″65	2,″1
10 0	6, 14	6, 51	7, 02	2, 2
17 0	6, 59	7, 19	8, 27	2, 4
17 54	. . . .	. . . .	9, 14	. . .
20 0	6, 92	7, 76	. . . .	2, 6
22 30	7, 30	8, 86	. . . .	2, 9
22 46	. . . .	9, 44	. . . .	3, 1
25 0	7, 88	. . . .	. . . .	. . .
27 0	8, 71	. . . .	. . . .	. . .
27 49	9, 84	. . . .	. . . .	. . .
27 0	11, 11	. . . .	. . . .	. . .
25 0	12, 28	. . . .	. . . .	. . .
22 30	13, 25	10, 05	. . . .	3, 3
20 0	13, 98	11, 47	. . . .	3, 8
17 0	14, 68	12, 38	10, 11	4, 1
10 0	15, 77	13, 62	11, 90	4, 5
0 0	16, 31	14, 20	12, 55	4, 7
♂ inferior				

VENERIS.

Argumentum	PARALLAXIS ☉ in apog.	☿ in diff. med.	☉ in perig.	☉ diam. in diff. med.
♂ superior				
0° 0′	5,″00	5,″05	5,″10	4,″6
10 0	5, 11	5, 16	5, 21	4, 7
20 0	5, 47	5, 52	5, 56	5, 0
30 0	6, 24	6, 27	6, 30	5, 1
40 0	7, 97	7, 93	7, 87	7, 3
42 30	8, 86	8, 70	8, 56	8, 0
45 0	10, 90	10, 12	9, 72	9, 3
45 21	. . .	. . .	13, 06	. . .
46 20	. . .	12, 60	. . .	11, 6
47 22	12, 17	. . .	. . .	. . .
45 0	13, 60	15, 68	17, 56	14, 4
42 30	16, 80	18, 35	20, 03	16, 9
40 0	18, 55	20, 03	21, 68	18, 4
30 0	23, 77	25, 34	27, 12	23, 3
20 0	27, 08	28, 77	30, 69	26, 5
10 0	29, 02	30, 78	32, 78	28, 3
0 0	29, 65	31, 83	33, 48	29, 3
♂ inferior				

MARTIS

Argumentum	PARALLAXIS ♂ in aphel.	in diff. med.	in perihelio	☉ diam. in diff. med.
0s 0°	3,″26	3,″45	3,″66	1,″8
10	3, 29	3, 48	3, 69	1, 8
20	3, 39	3, 69	3, 82	1, 9
1 0	3, 54	3, 77	4, 04	2, 0
10	3, 78	4, 05	4, 37	2, 1
20	4, 10	4, 44	4, 85	2, 3
2 0	4, 52	4, 96	5, 52	2, 6
10	5, 07	5, 64	6, 27	2, 9
20	5, 74	6, 51	7, 61	3, 4
3 0	6, 53	7, 57	9, 12	4, 0
10	7, 44	8, 80	10, 93	4, 6
20	8, 42	10, 15	12, 96	5, 3
4 0	9, 45	11, 54	15, 08	6, 0
10	10, 41	12, 90	17, 15	6, 7
20	11, 29	14, 14	19, 03	7, 4
5 0	12, 04	15, 18	20, 61	7, 9
10	12, 60	15, 96	21, 80	8, 3
20	12, 95	16, 45	22, 54	8, 5
6 0	13, 07	16, 61	22, 78	8, 6

IOVIS

Argumentum	in diff. med. Paral.	semidiam.
0s 0°	1,″40	14,″8
10	1, 41	14, 9
20	1, 42	15, 0
1 0	1, 44	15, 2
10	1, 47	15, 5
20	1, 50	15, 9
2 0	1, 54	16, 3
10	1, 59	16, 8
20	1, 64	17, 4
3 0	1, 70	18, 0
10	1, 76	18, 7
20	1, 82	19, 4
4 0	1, 88	20, 0
10	1, 93	20, 5
20	1, 98	21, 0
5 0	2, 02	21, 4
10	2, 04	21, 6
20	2, 06	21, 8
6 0	2, 08	22, 0

SATVRNI

in diff. med. Paral.	semidiam.
0,″82	7,″2
0, 82	7, 3
0, 84	7, 4
0, 84	7, 5
0, 85	7, 6
0, 86	7, 7
0, 87	7, 8
0, 88	7, 9
0, 90	8, 0
0, 92	8, 1
0, 94	8, 3
0, 95	8, 4
0, 97	8, 6
0, 98	8, 7
1, 00	8, 8
1, 01	8, 8
1, 01	8, 9
1, 02	9, 0
1, 02	9, 0

VRANI

in diff. med. Paral.	semidiam	Argumentum
0,″43	1,″84	12s 0°
0, 43	1, 84	20
0, 43	1, 85	10
0, 44	1, 86	11 0
0, 44	1, 87	20
0, 44	1, 88	10
0, 44	1, 89	10 0
0, 45	1, 91	20
0, 45	1, 92	10
0, 46	1, 94	9 0
0, 46	1, 96	20
0, 46	1, 98	10
0, 47	1, 99	8 0
0, 47	2, 01	20
0, 47	2, 02	10
0, 47	2, 03	7 0
0, 47	2, 04	20
0, 48	2, 05	10
0, 48	2, 05	6 0

XXXVI FIXARVM PRAECIPVARVM

ASCENSIONES RECTAE

ET

DECLINATIONES MEDIAE

PRO INITIO ANNI MDCCCII

EX

OBSERVATIONIBVS CL. MASKELYNE

PETITAE

VNA CVM

TABVLIS ABERRATIONIS ET NVTATIONIS

PARTIM IN TEMPORE PARTIM IN STATIO

QVIBVS ACCEDVNT

PRO

STELLA POLARI

TABVLAE SINGVLARES.

ASCENSIONES RECTAE MEDIAE

XXXVI Fixarum praecipuarum pro initio anni MDCCCII

Nomina ſtellarum.		Aſcenſio recta media 1802.	Praeceſſ. annua +	Motus proprius annuus	Differentia cum catologo 1790	Differentia cum catologo 1770
		h ′ ″	″	″	″	″
γ Pegaſi	2	0 3 3,12	3,075	— 0,006	— 0,13	+ 0,15
α Arietis	2.3	1 56 2,27	3,339	+ 0,007	— 0,13	+ 0,06
α Ceti	2	2 51 56,42	3,123	— 0,008	— 0,15	+ 0,06
Aldebaran	1	4 24 34,30	3,423	+ 0,002	— 0,12	0,00
Capella	1	5 2 4,96	4,401	+ 0,014	+ 0,04	+ 0,16
Rigel	1	5 5 1,61	2,878	— 0,002	— 0,23	— 0,01
β Tauri	2	5 13 47,05	3,780	+ 0,001	— 0,08	+ 0,10
α Orionis	1	5 44 27,26	3,243	+ 0,001	— 0,21	+ 0,01
Sirius	1	6 36 25,45	2,681	— 0,028	— 0,17	— 0,03
Caſtor	2	7 21 56,51	3,863	— 0,010	— 0,01	— 0,12
Procyon	1.2	7 28 55,60	3,195	— 0,053	— 0,17	— 0,06
Pollux	2	7 33 10,68	3,737	— 0,049	— 0,11	— 0,08
Alphard	2	9 17 51,30	2,952	— 0,006	— 0,33	— 0,01
Regulus	1	9 57 48,80	3,227	— 0,015	— 0,28	— 0,13
Denebola	1.2	11 38 56,87	3,105	— 0,038	— 0,20	+ 0,01
β Virginis	3	11 40 22,77	3,076	+ 0,049	— 0,11	— 0,13
Spica	1	13 14 46,70	3,148	— 0,001	— 0,20	+ 0,06
Arcturus	1	14 6 37,92	2,812	— 0,084	— 0,19	— 0,06
1 ad α Librae	6	14 39 45,48	3,303	— 0,007	— 0,18	. . .
2 ad α Librae	2	14 39 56,80	3,304	— 0,007	— 0,16	+ 0,05
Gemma	2.3	15 26 18,45	2,528	+ 0,017	— 0,05	+ 0,21
α Serpentis	2	15 34 31,39	2,937	+ 0,007	— 0,22	— 0,04
Antares	1	16 17 17,43	3,658	0,000	— 0,29	+ 0,02
α Herculis	2	17 5 37,41	2,731	0,000	— 0,14	. . .
α Ophiuchi	2	17 25 44,81	2,772	+ 0,004	— 0,21	— 0,04
Wega	1	18 30 13,97	2,013	+ 0,015	— 0,02	— 0,04
γ Aquilae	3	19 36 50,53	2,853	— 0,007	— 0,25	— 0,05
Atair	1.2	19 41 7,13	2,893	+ 0,032	— 0,19	— 0,02
β Aquilae	3.4	19 45 35,07	2,947	— 0,002	— 0,15	— 0,01
1 ad α Capric.	3	20 6 39,69	3,336	0,000	— 0,17	— 0,06
2 ad α Capric.	3	20 7 3,48	3,336	+ 0,003	— 0,24	— 0,11
Deneb	1.2	20 34 40,91	2,042	— 0,005	— 0,23	— 0,14
α Aquarii	3	21 55 36,43	3,086	— 0,005	— 0,38	— 0,06
Fomahand	1.2	22 46 40,81	3,320	+ 0,023	— 0,39	— 0,21
α Pegaſi	2	22 54 54,23	2,976	— 0,004	— 0,22	— 0,03
α Andromedae	2	23 58 10,61	3,065	+ 0,005	— 0,10	+ 0,05

Argum. pro Aberrat. et Nutat.		γ PEGASI. 2.		α ARIETIS, Lucida. 2.		α CETI, Menkar. 2.		α TAURI, Aldebaran. 1.	
Long. ☉ et Nod. ☾		Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +
♑	°	"	"	"	"	"	"	"	"
	0	0,723	1,839	0,826	1,766	1,092	1,973	1,477	1,924
	10	0,740	1,650	0,722	1,562	0,947	1,779	1,262	1,715
	20	0,792	1,470	0,655	1,371	0,833	1,591	1,069	1,509
♒	0	0,885	1,308	0,630	1,199	0,754	1,417	0,905	1,322
	10	1,011	1,167	0,646	1,052	0,712	1,259	0,777	1,155
	20	1,167	1,052	0,703	0,932	0,710	1,124	0,679	1.011
♓	0	1,347	0.964	0,802	0,847	0,748	1,016	0,626	0,899
	10	1,548	0,908	0,934	0,794	0,824	0,938	0,614	0,821
	20	1,761	0,886	1,098	0,780	0,936	0,892	0.644	0,778
♈	0	1,982	0,897	1,291	0,802	1,080	0,883	0,713	0,771
	10	2,206	0,941	1,506	0,860	1,252	0,901	0,820	0.804
	20	2,421	1.018	1,726	0,954	1,446	0,956	0,972	0,871
♉	0	2,624	1,124	1,973	1,079	1,657	1,042	1,148	0,974
	10	2,807	1,259	2,211	1,233	1,878	1,159	1,351	1,107
	20	2,967	1,415	2,443	1,408	2,104	1,300	1,574	1,268
♊	0	3,097	1,588	2,661	1,605	2,327	1,463	1,810	1,451
	10	3,194	1,773	2,860	1,809	2,539	1,642	2,052	1,650
	20	3,254	1,967	3,032	2,020	2,735	1,832	2,292	1,860
♋	0	3,277	2,161	3,174	2,234	2,908	2,027	2,523	2,076
	10	3,260	2,350	3,278	2,438	3,053	2,221	2,738	2,287
	20	3,208	2,530	3,345	2,629	3,167	2,409	2,931	2,491
♌	0	3,115	2,692	3,370	2,801	3,246	2,583	3,095	2,678
	10	2,989	2,833	3,354	2,948	3,288	2,741	3,223	2,847
	20	2,833	2,948	3,297	3,068	3,290	2,876	3,321	2,989
♍	0	2,653	3,036	3,198	3,153	3,252	2,984	3,374	3,101
	10	2,452	3,092	3,066	3,206	3,176	3,062	3,386	3,179
	20	2,239	3,114	2,902	3,220	3.064	3,108	3,356	3,222
	0	2,018	3,103	2,709	3,198	2,920	3,117	3,287	3,229
♎	10	1,794	3,059	2,494	3,140	2,748	3,099	3,180	3,196
	20	1,579	2,982	2,274	3,046	2,554	3,044	3,028	3,129
♏	0	1,376	2.876	2,027	2,921	2,345	2,958	2,852	3,026
	10	1,193	2,741	1,789	2,767	2,122	2,841	2,649	2,893
	20	1,055	2,585	1,557	2,592	1,896	2,700	2,426	2,732
♐	0	0,905	2,412	1,339	2,397	1,673	2,537	2,190	2,549
	10	0,806	2,227	1,140	2,191	1,461	2,358	1,948	2,350
	20	0,746	2,035	0,968	1,980	1,265	2,168	1,708	2,140
♑	0	0,723	1,839	0,826	1,766	1,092	1,973	1,477	1,924

Summae harum quantitatum aberrationis et nutationis adde semper algebraice — 4"

Argum. pro Aberrat. et Nutat.	α AVRIGAE, Capella. 1.		β ORIONIS, Rigel. 1.		β TAVRI. 2.		α ORIONIS. 1.	
Long. ☉ et Nod. ☾	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +
s °	"	"	"	"	"	"	"	"
0 0	1,554	1,836	1,702	2,022	1,716	1,930	1,915	1,994
10	1,237	1,536	1,475	1,844	1,460	1,696	1,680	1,793
20	0,940	1,305	1,267	1,669	1,220	1,470	1,455	1,598
1 0	0,676	1,069	1,079	1,503	1,003	1,261	1,247	1,414
10	0,453	0,859	0,918	1,353	0,816	1,075	1,061	1,248
20	0.277	0,686	0,793	1,223	0,666	0,917	0,905	1,105
2 0	0,153	0,551	0,704	1,116	0,557	0,791	0,782	0,991
10	0,086	0,460	0,653	1,036	0,491	0,702	0,695	0,907
20	0,077	0,418	0,643	0,987	0,471	0,652	0,647	0,854
3 0	0,125	0,422	0,675	0,967	0,495	0,644	0,642	0,837
10	0,231	0,474	0,746	0,979	0,565	0,676	0,677	0,855
20	0,391	0,572	0.855	1,021	0,682	0,749	0,752	0,908
4 0	0,598	0,715	1,001	1,094	0,839	0,860	0,865	0,995
10	0,850	0,897	1,176	1,194	1,030	1,006	1,015	1,112
20	1,136	1,112	1,376	1,319	1,250	1,182	1,192	1,256
5 0	1,449	1,354	1,596	1,464	1,493	1,383	1,394	1,423
10	1,778	1,615	1,828	1,625	1,751	1,602	1,615	1,607
20	2,115	1,888	2,064	1,798	2.017	1,833	1,847	1,804
6 0	2,446	2,164	2,298	1,978	2,284	2,070	2,085	2,006
10	2,763	2,437	2,525	2,156	2,540	2,304	2,320	2,207
20	3,060	2,695	2,733	2,331	2,780	2,530	2,545	2,402
7 0	3,324	2,931	2,921	2,497	2,997	2,739	2,753	2,586
10	3,547	3,141	3,082	2,647	3,184	2,925	2,939	2,752
20	3,723	3,314	3.207	2,777	3,334	3,083	3,095	2,895
8 0	3,847	3,449	3,296	2,884	3,443	3,209	3,218	3,009
10	3,914	3,540	3,347	2,964	3,509	3,298	3,305	3,093
20	3,923	3,582	3,357	3,013	3,529	3,348	3,353	3,146
9 0	3,875	3,578	3,325	3,033	3,505	3,356	3,358	3,163
10	3,769	3,526	3,254	3,021	3,435	3,324	3,323	3,145
20	3.609	3,428	3,145	2,979	3,318	3,251	3,248	3,092
10 0	3,402	3,285	2,999	2,906	3,161	3,140	3,134	3,005
10	3,150	3,103	2,824	2,806	2,970	2,994	2,985	2,888
20	2,864	2,888	2,624	2,681	2,750	2,818	2,808	2,744
11 0	2,551	2,646	2,404	2,536	2,507	2,617	2,606	2,577
10	2,222	2,385	2,172	2,375	2,249	2,398	2,385	2,393
20	1,887	2,112	1,936	2,202	1,983	2,167	2,153	2,196
12 0	1,554	1,836	1,702	2.022	1.716	1,930	1,915	1,994

Summae harum quantitatum aberrationis et nutationis adde semper algebraice — 4"

Argum. pro Aberrat. et Nutat.	α CANIS MAJ. Sirius. 1. 2.		α GEMINORVM, Caſtor. 1. 2.		α CANIS MIN: Procyon. 1. 2.		β GEMINORVM, Pollux. 2.	
Long. ☉ et Nod. ☾	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +
☌ °	"	"	"	"	"	"	"	"
0 0	2,205	1,970	2,514	2,143	2,472	2,024	2,558	2,139
10	1,959	1,803	2,246	1,899	2,245	1,823	2,305	1,902
20	1,716	1,642	1,970	1,659	2,012	1,630	2,042	1,670
1 0	1,483	1,492	1,695	1,431	1,779	1,448	1,777	1,450
10	1,264	1,358	1,431	1,218	1,552	1,282	1,520	1,245
20	1,066	1,244	1,184	1,030	1,340	1,137	1,278	1,062
2 0	0,898	1,152	0,961	0,871	1,147	1,019	1,057	0,907
10	0,764	1,085	0,770	0,746	0,981	0,930	0,865	0,787
20	0,667	1,047	0,616	0,660	0,845	0,876	0,707	0,704
3 0	0,611	1,037	0,504	0,614	0,744	0,853	0,589	0,658
10	0,595	1,058	0,437	0,610	0,682	0,866	0,514	0,655
20	0,624	1,105	0,419	0,648	0,658	0,914	0,483	0,693
4 0	0,695	1,181	0,447	0,728	0,677	0,995	0,499	0,771
10	0,804	1,282	0,525	0,847	0,735	1,106	0,561	0,885
20	0,950	1,404	0,646	1,001	0,832	1,245	0,666	1,032
5 0	1,128	1,545	0,808	1,184	0,965	1,405	0,812	1,209
10	1,334	1,699	1,007	1,391	1,128	1,584	0,993	1,411
20	1,557	1,862	1,234	1,618	1,317	1,777	1,205	1,631
6 0	1,795	2,030	1,486	1,857	1,528	1,976	1,442	1,861
10	2,041	2,197	1,754	2,101	1,755	2,177	1,695	2,098
20	2,284	2,358	2,030	2,341	1,988	2,370	1,958	2,330
7 0	2,517	2,508	2,305	2,569	2,221	2,552	2,223	2,550
10	2,736	2,642	2,569	2,782	2,448	2,718	2,580	2,755
20	2,934	2,756	2,816	2,970	2,660	2,863	2,722	2,938
8 0	3,102	2,848	3,039	3,129	2,853	2,981	2,943	3,093
10	3,236	2,915	3,230	3,254	3,019	3,070	3,135	3,213
20	3,333	2,953	3,384	3,340	3,155	3,124	3,293	3,296
9 0	3,389	2,963	3,496	3,386	3,256	3,147	3,411	3,341
10	3,405	2,942	3,563	3,390	3,318	3,134	3,486	3,345
20	3,376	2,895	3,581	3,352	3,342	3,086	3,517	3,307
10 0	3,305	2,819	3,553	3,272	3,323	3,005	3,501	3,229
10	3,196	2,710	3,475	3,153	3,265	2,894	3,439	3,115
20	3,050	2,596	3,354	2,999	3,168	2,755	3,334	2,968
11 0	2,872	2,455	3,192	2,816	3,035	2,595	3,188	2,791
10	2,667	2,301	2,993	2,609	2,872	2,416	3,007	2,589
20	2,443	2,138	2,776	2,382	2,683	2,223	2,795	2,369
12 0	2,205	1,970	2,514	2,143	2,472	2,024	2,558	2,139

Summae harum quantitatum aberrationis et nutationis adde ſemper algebraice — 4"

Argum. pro Aberrat. et Nutat.	α HYDRAE, Alphard. 2.		α LEONIS, Regulus. 1.		β LEONIS, Denebola. 1. 2.		β VIRGINIS. 5.	
Long. ☉ et Nod. ☾	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +
	"	"	"	"	"	"	"	"
0s 0	2,949	1,935	3,093	2,127	3,234	2,180	3,235	2,032
10	2,781	1,749	2,955	1,924	3,195	1,983	3,196	1,840
20	2,588	1,574	2,787	1,723	3,119	1,787	3,121	1,652
1 0	2,379	1,413	2,594	1,531	3,008	1,599	3,012	1,476
10	2,157	1'268	2,384	1,353	2,867	1,422	2,872	1,315
20	1,930	1,146	2,163	1,195	2,701	1,262	2,704	1,175
2 0	1,706	1,049	1,936	1,061	2,512	1,125	2,515	1,060
10	1,492	0,981	1,711	0,956	2,307	1,016	2,312	0,974
20	1,292	0,944	1,496	0,882	2,092	0,936	2,098	0,918
3 0	1,114	0,940	1,295	0,842	1,875	0,886	1,883	0,896
10	0,962	0,969	1,106	0,838	1,663	0,871	1,669	0,905
20	0,843	1,027	0,964	0,868	1,461	0,891	1,467	0,951
4 0	0,758	1,116	0,845	0,933	1,275	0,945	1,280	1,027
10	0,712	1,232	0,757	1,031	1,111	1,030	1,116	1,133
20	0,704	1,370	0,709	1,158	0,974	1,146	0,977	1,265
5 0	0,735	1,529	0,701	1,310	0,869	1,287	0,871	1,421
10	0,805	1,701	0,731	1,484	0,798	1,449	0,799	1,592
20	0,911	1,882	0,801	1,673	0,764	1,629	0,764	1,777
6 0	1,051	2,067	0,907	1,873	0,766	1,820	0,765	1,968
10	1,219	2,251	1,045	2,076	0,805	2,017	0,804	2,160
20	1,412	2,426	1,213	2,277	0,881	2,213	0,879	2,348
7 0	1,621	2,587	1,406	2,469	0,992	2,401	0,988	2,524
10	1,843	2,732	1,616	2,647	1,133	2,578	1,128	2,685
20	2,070	2,854	1,837	2,805	1,299	2,738	1,296	2,825
8 0	2,294	2,951	2,064	2,939	1,488	2,875	1,485	2,940
10	2,508	3,019	2,289	3,044	1,693	2,984	1,688	3,026
20	2,708	3,056	2,504	3,118	1,908	3,064	1,901	3,082
9 0	2,886	3,060	2,705	3,158	2,125	3,114	2,117	3,104
10	3,038	3,031	2,894	3,162	2,337	3,129	2,331	3,095
20	3,157	2,973	3,036	3,131	2,539	3,109	2,533	3,049
10 0	3,242	2,884	3,157	3,067	2,725	3,055	2,720	2,973
10	3,288	2,768	3,243	2,969	2,889	2,970	2,884	2,867
20	3,296	2,630	3,291	2,842	3,026	2,854	3,023	2,735
11 0	3,265	2,471	3,299	2,690	3,131	2,713	3,129	2,579
10	3,195	2,299	3,269	2,516	3,202	2,551	3,201	2,408
20	3,089	2,118	3,199	2,327	3,236	2,371	3,236	2,223
12 0	0,949	1,933	3,093	2,127	3,234	2,180	3,235	2,032

Summae harum quantitatum aberrationis et nutationis adde ſemper algebraice — 4"

Argum. pro Aberrat. et Nutat.		α VIRGINIS, Spica. 1.		α BOOTIS, Arcturus. 1.		ι ad α LIBRAE. 6.		ι ad α LIBRAE. 2.	
Long. ☉ et Nod. ☾		Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +
s	°	"	"	"	"	"	"	"	"
0	0	3,192	1,891	3,125	2,202	2,985	1,867	2,983	1,867
	10	3,251	1,697	3,238	2,023	3,125	1,662	3,123	1,662
	20	3,271	1,512	3,314	1,843	3,232	1,469	3,232	1,468
1	0	3,255	1,342	3,351	1,669	3,301	1,292	3,301	1,291
	10	3,196	1,191	3,347	1,506	3,332	1,137	3,332	1,137
	20	3,103	1,065	3,301	1,357	3,321	1,006	3,321	1,007
2	0	2,977	0,966	3,215	1,226	3,269	0,907	3,271	0,907
	10	2,821	0,901	3,093	1,119	3,180	0,840	3,181	0,840
	20	2,640	0,869	2,938	1,040	3,054	0,810	3,056	0,809
3	0	2,441	0,871	2,754	0,990	2,896	0,815	2,899	0,814
	10	2,226	0,907	2,548	0,971	2,713	0,856	2,715	0,855
	20	2,006	0,976	2,324	0,982	2,507	0,931	2,509	0,931
4	0	1,784	1,076	2,091	1,024	2,286	1,040	2,288	1,040
	10	1,570	1,205	1,855	1,097	2,056	1,178	2,058	1,178
	20	1,369	1,357	1,625	1,197	1,823	1,340	1,825	1,340
5	0	1,188	1,530	1,403	1,317	1,596	1,522	1,598	1,522
	10	1,031	1,715	1,200	1,465	1,381	1,720	1,383	1,720
	20	0,903	1,911	1,023	1,626	1,187	1,926	1,189	1,926
6	0	0,808	2,109	0,875	1,798	1,015	2,133	1,017	2,133
	10	0,749	2,303	0,762	1,977	0,875	2,338	0,877	2,338
	20	0,729	2,488	0,686	2,157	0,768	2,531	0,768	2,532
7	0	0,747	2,658	0,649	2,331	0,699	2,708	0,699	2,709
	10	0,804	2,809	0,653	2,494	0,668	2,863	0,668	2,863
	20	0,897	2,935	0,699	2,643	0,679	2,994	0,679	2,995
8	0	1,025	3,034	0,785	2,774	0,751	3,093	0,729	3,095
	10	1,179	3,099	0,907	2,881	0,820	3,160	0,819	3,160
	20	1,360	3,131	1,062	2,960	0,946	3,190	0,944	3,191
9	0	1,559	3,129	1,246	3,010	1,104	3,185	1,101	3,186
	10	1,774	3,093	1,452	3,029	1,287	3,144	1,285	3,145
	20	1,994	3,024	1,676	3,018	1,493	3,069	1,491	3,069
10	0	2,210	2,924	1,909	2,976	1,714	2,960	1,712	2,960
	10	2,430	2,795	2,145	2,903	1,944	2,822	1,942	2,822
	20	2,631	2,643	2,377	2,803	2,177	2,660	2,175	2,660
11	0	2,812	2,470	2,597	2683	2,404	2,478	2,402	2,478
	10	2,969	2,285	2,800	2,535	2,619	2,280	2,617	2,280
	20	3,097	2,089	2,977	2,374	2,813	2,074	2,811	2,074
12	0	3,192	1,891	3,125	2,202	2,985	1,867	2,983	1,867

Summae harum quantitatum aberrationis et nutationis adde semper algebraice — 4"

Argum. pro Aberrat. et Nutat.		α CORONAE BOR: Gemma. 2.		α SERPENTIS. 2.		α SCORPII, Antares. 1.		α HERCVLIS. 2. 3.	
Long. ☉ et Nod. ☾		Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +
s	°	"	"	"	"	"	"	"	"
0	0	2,869	2,207	2,741	2,048	2,597	1,863	2,301	2,039
	10	3,062	2,046	2,919	1,863	2,823	1,638	2,532	1,869
	20	3,223	1,884	3,070	1,684	3,022	1,423	2,746	1,702
1	0	3,347	1,726	3,189	1,514	3,195	1,225	2,939	1,544
	10	3,430	1,576	3,272	1,359	3,329	1,053	3,103	1,400
	20	3,469	1,439	3,315	1,222	3,422	0,908	3,232	1,275
2	0	3,464	1,317	3,319	1,110	3,472	0,796	3,325	1,171
	10	3,416	1,217	3,282	1,025	3,476	0,720	3,376	1,092
	20	3,324	1,142	3,207	0,970	3,437	0,684	3,387	1,041
3	0	3,190	1,092	3,095	0,945	3,352	0,688	3,356	1,019
	10	3,021	1,070	2,949	0,953	3,229	0,731	3,283	1,027
	20	2,821	1,076	2,775	0,993	3,067	0,813	3,172	1,065
4	0	2,597	1,110	2,578	1,064	2,873	0,931	3,025	1,130
	10	2,354	1,172	2,363	1,162	2,653	1,083	2,847	1,223
	20	2,100	1,258	2,137	1,286	2,412	1,261	2,641	1,340
5	0	1,843	1,366	1,906	1,433	2,159	1,462	2,416	1,476
	10	1,591	1,494	1,679	1,596	1,902	1,678	2,181	1,628
	20	1,351	1,638	1,461	1,770	1,647	1,902	1,939	1,791
6	0	1,131	1,793	1,259	1,952	1,403	2,137	1,699	1,961
	10	0,938	1,954	1,081	2,137	1,177	2,362	1,468	2,131
	20	0,777	2,116	0,930	2,316	0,978	2,577	1,254	2,298
7	0	0,653	2,274	0,811	2,486	0,805	2,775	1,061	2,456
	10	0,570	2,424	0,728	2,641	0,671	2,947	0,897	2,600
	20	0,531	2,561	0,685	2,778	0,578	3,092	0,768	2,725
8	0	0,536	2,683	0,681	2,890	0,528	3,204	0,675	2,829
	10	0,584	2,783	0,718	2,975	0,524	3,280	0,624	2,908
	20	0,675	2,858	0,793	3,030	0,563	3,316	0,613	2,959
9	0	0,810	2,908	0,905	3,055	0,648	3,312	0,644	2,981
	10	0,979	2,930	1,051	3,047	0,771	3,269	0,717	2,973
	20	1,179	2,924	1,225	3,007	0,933	3,187	0,828	2,935
10	0	1,403	2,890	1,422	2,936	1,127	3,069	0,975	2,870
	10	1,646	2,828	1,637	2,838	1,347	2,917	1,153	2,777
	20	1,900	2,742	1,863	2,714	1,588	2,739	1,359	2,660
11	0	2,150	2,634	2,094	2,567	1,841	2,538	1,584	2,524
	10	2,409	2,506	2,321	2,404	2,098	2,322	1,819	2,372
	20	2,649	2,362	2,539	2,230	2,353	2,098	2,061	2,209
12	0	2,869	2,207	2,741	2,048	2,597	1,863	2,301	2,039

Summae harum quantitatum aberrationis et nutationis adde semper algebraice — 4"

Argum. pro Aberrat. et Nutat.		α OPHIVCHI. 2.		α LYRAE, Wega. 1.		γ AQVILAE. 3.		α AQVILAE, Atair. 1. 2.	
Long. ☉ et Nod. ☾		Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +
0 s	0	2,190	2,021	1,792	1,935	1,484	1,952	1,463	1,961
	10	2,425	1,848	2,095	1,808	1,709	1,776	1,687	1,778
	20	2,646	1,670	2,392	1,689	1,942	1,605	1,920	1,607
1	0	2,848	1,521	2,678	1,580	2,178	1,447	2,155	1,449
	10	3,025	1,377	2,943	1,483	2,409	1,305	2,383	1,301
	20	3,171	1,252	3,179	1,401	2,627	1,185	2,602	1,179
2	0	3,280	1,149	3,378	1,339	2,845	1,090	2,801	1,081
	10	3,350	1,072	3,556	1,297	2,999	1,022	2,976	1,010
	20	3,380	1,024	3,650	1,277	3,142	0,984	3,122	0,971
3	0	3,369	1,005	3,715	1,278	3,251	0,976	3,234	0,962
	10	3,315	1,016	3,723	1,299	3,321	1,000	3,307	0,984
	20	3,221	1,057	3,679	1,343	3,353	1,054	3,342	1,037
4	0	3,091	1,127	3,586	1,405	3,343	1,137	3,336	1,120
	10	2,927	1,230	3,444	1,488	3,290	1,246	3,290	1,231
	20	2,735	1,345	3,259	1,586	3,199	1,378	3,207	1,365
5	0	2,522	1,484	3,034	1,697	3,072	1,529	3,081	1,515
	10	2,292	1,650	2,779	1,816	2,913	1,694	2,925	1,682
	20	2,052	1,806	2,501	1,940	2,726	1,869	2,742	1,850
6	0	1,810	1,979	2,208	2,067	2,516	2,048	2,537	2,039
	10	1,575	2,152	1,907	2,192	2,291	2,224	2,313	2,222
	20	1,554	2,321	1,608	2,311	2,058	2,395	2,080	2,395
7	0	1,152	2,479	1,322	2,420	1,822	2,553	1,847	2,554
	10	0,975	2,625	1,057	2,517	1,591	2,695	1,617	2,699
	20	0,829	2,748	0,821	2,599	1,375	2,815	1,398	2,821
8	0	0,720	2,851	0,622	2,661	1,175	2,910	1,199	2,919
	10	0,650	2,928	0,464	2,705	1,001	2,978	1,024	2,990
	20	0,620	2,976	0,350	2,725	0,858	3,016	0,878	3,029
9	0	0,631	2,995	0,287	2,722	0,749	3,024	0,766	3,038
	10	0,685	2,984	0,277	2,701	0,679	3,000	0,693	3,016
	20	0,779	2,945	0,321	2,657	0,647	2,946	0,658	2,965
10	0	0,909	2,875	0,414	2,595	0,657	2,863	0,664	2,880
	10	1,075	2,770	0,556	2,512	0,710	2,754	0,710	2,769
	20	1,265	2,635	0,751	2,414	0,801	2,622	0,793	2,637
11	0	1,478	2,510	0,966	2,305	0,928	2,471	0,919	2,485
	10	1,708	2,361	1,221	2,184	1,087	2,306	1,075	2,318
	20	1,948	2,194	1,499	2,060	1,274	2,131	1,258	2,141
12	0	2,190	2,021	1,792	1,935	1,484	1,952	1,463	1,961

Summae harum quantitatum aberrationis et nutationis adde semper algebraice — 4"

Argum. pro Aberrat. et Nutat.	β AQVILAE. 3. 4.		ι ad α CAPRICORNI. 3.		ε ad α CAPRICORNI. 3.		α CYGNI, Deneb. 1. 2.	
Long. ☉ et Nod. ☾	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +
s °	"	"	"	"	"	"	"	"
0 0	1,447	1,971	1,339	2,078	1,331	2,079	0,915	1,605
10	1,667	1,787	1,554	1,868	1,539	1,870	1,189	1,483
20	1,896	1,610	1,784	1,663	1,775	1,663	1,488	1,377
1 0	2,129	1,445	2,021	1,469	2,011	1,469	1,802	1,291
10	2,358	1,297	2,256	1,291	2,246	1,291	2,123	1,226
20	2,576	1,171	2,483	1,133	2,475	1,133	2,438	1,184
2 0	2,776	1,069	2,696	1,002	2,688	1,002	2,740	1,167
10	2,953	0,996	2,887	0,902	2,880	0,901	3,021	1,175
20	3,102	0,953	3,052	0,835	3,045	0,834	3,270	1,209
3 0	3,216	0,942	3,184	0,803	3,179	0,803	3,482	1,267
10	3,293	0,964	3,279	0,808	3,277	0,807	3,648	1,347
20	3,332	1,016	3,338	0,848	3,337	0,846	3,763	1,446
4 0	3,330	1,099	3,355	0,924	3,356	0,923	3,824	1,562
10	3,287	1,209	3,331	1,033	3,333	1,032	3,831	1,693
20	3,206	1,343	3,266	1,172	3,269	1,171	3,783	1,832
5 0	3,098	1,495	3,164	1,334	3,170	1,334	3,680	1,977
10	2,936	1,664	3,026	1,517	3,034	1,516	3,525	2,121
20	2,755	1,844	2,856	1,715	2,866	1,714	3,325	2,262
6 0	2,553	2,029	2,661	1,922	2,669	1,921	3,085	2,395
10	2,353	2,213	2,446	2,132	2,461	2,130	2,811	2,517
20	2,104	2,390	2,216	2,337	2,225	2,337	2,512	2,623
7 0	1,871	2,555	1,979	2,531	1,989	2,531	2,198	2,709
10	1,642	2,703	1,744	2,709	1,754	2,709	1,877	2,774
20	1,424	2,829	1,517	2,867	1,525	2,867	1,562	2,816
8 0	1,224	2,931	1,304	2,998	1,312	2,998	1,260	2,833
10	1,047	3,004	1,113	3,098	1,120	3,099	0,979	2,825
20	0,898	3,047	0,948	3,165	0,955	3,166	0,750	2,791
9 0	0,784	3,058	0,816	3,197	0,821	3,197	0,518	2,733
10	0,707	3,036	0,721	3,192	0,723	3,192	0,352	2,653
20	0,668	2,984	0,662	3,152	0,663	3,154	0,237	2,554
10 0	0,670	2,901	0,645	3,076	0,644	3,077	0,176	2,438
10	0,713	2,791	0,669	2,967	0,667	2,968	0,169	2,307
20	0,794	2,657	0,734	2,828	0,731	2,829	0,217	2,168
11 0	0,902	2,505	0,836	2,666	0,830	2,666	0,320	2,023
10	1,064	2,336	0,974	2,483	0,966	2,484	0,475	1,879
20	1,245	2,156	1,144	2,285	1,134	2,286	0,675	1,738
12 0	1,447	1,971	1,339	2,078	1,331	2,079	0,915	1,605

Summae harum quantitatum aberrationis et nutationis adde semper algebraice — 4"

Argum. pro Aberrat. et Nutat.		α AQUARII 3.		α PISCIS AUSTR. Fomahand. 1. 2.		α PEGASI, Markab. 2.		α ANDROMEDAE 2.	
Aberrat. et Nutat.		Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +
0h	0	1,740	2,012	0,634	2,362	0,775	1,844	0,597	1,659
	10	1,077	1,820	1,741	2,150	0,861	1,661	0,622	1,473
	20	1,245	1,632	0,885	1,932	0,981	1,488	0,687	1,305
1	0	1,431	1,457	1,065	1,718	1,153	1,332	0,795	1,155
	10	1,636	1,297	1,270	1,515	1,311	1,194	0,935	1,042
	20	1,852	1,160	1,500	1,321	1,511	1,082	1,108	0,958
2	0	2,075	1,047	1,745	1,149	1,726	0,998	1,309	0,877
	10	2,295	0,964	1,998	1,003	1,947	0,942	1,531	0,849
	20	2,503	0,911	2,251	0,889	2,172	0,921	1,768	0,857
3	0	2,698	0,893	2,495	0,809	2,391	0,931	2,013	0,901
	10	2,872	0,907	2,725	0,763	2,597	0,976	2,256	0,987
	20	3,018	0,956	2,933	0,755	2,786	1,050	2,491	1,083
4	0	3,134	1,034	3,115	0,787	2,951	1,153	2,712	1,218
	10	3,216	1,144	3,259	0,854	3,088	1,282	2,911	1,377
	20	3,261	1,279	3,365	0,958	3,191	1,433	3,083	1,555
5	0	3,268	1,436	3,431	1,091	3,258	1,601	3,220	1,746
	10	3,236	1,610	3,453	1,252	3,286	1,781	3,323	1,945
	20	3,166	1,796	3,431	1,436	3,275	1,968	3,383	2,146
6	0	3,060	1,988	3,366	1,638	3,225	2,156	3,405	2,341
	10	2,923	2,180	3,259	1,850	3,139	2,339	3,378	2,527
	20	2,757	2,368	3,115	2,068	3,019	2,512	3,313	2,697
7	0	2,569	2,543	2,937	2,282	2,867	2,668	3,207	2,845
	10	2,364	2,703	2,730	2,487	2,689	2,806	3,065	2,958
	20	2,148	2,840	2,500	2,679	2,489	2,918	2,892	3,062
8	0	1,927	2,953	2,255	2,851	2,274	3,002	2,691	3,123
	10	1,707	3,036	2,002	2,997	2,053	3,058	2,469	3,151
	20	1,497	3,089	1,749	3,111	1,828	3,079	2,232	3,142
9	0	1,302	3,107	1,505	3,191	1,609	3,069	1,987	3,099
	10	1,128	3,093	1,275	3,237	1,403	3,024	1,744	3,013
	20	0,982	3,044	1,067	3,245	1,214	2,950	1,509	2,917
10	0	0,866	2,966	0,887	3,213	1,049	2,847	1,288	2,782
	10	0,784	2,856	0,741	3,146	0,912	2,718	1,089	2,623
	20	0,739	2,721	0,635	3,042	0,809	2,567	0,917	2,445
11	0	0,732	2,564	0,569	2,909	0,742	2,399	0,780	2,254
	10	0,764	2,390	0,547	2,748	0,714	2,219	0,677	2,055
	20	0,834	2,204	0,569	2,564	0,725	2,032	0,617	1,854
12	0	0,940	2,012	0,634	2,362	0,775	1,844	0,597	1,659

Summae harum quantitatum aberrationis et nutationis adde semper algebraice — 4″

DECLINATIONES MEDIAE

XXXVI Fixarum praecipuarum pro initio anni MDCCCII

Nomina stellarum.		Declinatio media 1802.	Variatio annua.	Motus propr. annuus	Differ. cum catalogo 1770.	Diff. cum catalog. Piazzi Append. 1800.	Diff. cum catalog. Maskel. corrig. Burg. 1802
		° ′ ″	″	″	″	″	″
γ Pegasi	2	14 5 4,1B.	+20,05	+0,15	−3,60	− 4,73	− 2,70
α Arietis	2.3	22 31 14,8	+17,54	−0,07	−3,06	− 2,10	− 2,36
α Ceti	2	3 18 23,4	+14,67	+0,08	+6,70	− 4,79	− 3,40
Aldebaran	1	16 5 59,4	+ 8,11	−0,12	−4,42	+ 1,23	− 2,62
Capella	1	45 46 47,6	+ 5,01	−0,44	−4,96	+ 0,64	− 1,46
Rigel	1	8 26 19,0A.	− 4,76	−0,16	+3,76	+ 5,62	+ 4,46
β Tauri	2	28 25 36,9B.	+ 4,02	−0,10	−5,16	− 2,40	− 2,16
α Orionis	1	7 21 32,2	+ 1,36	+0,13	−1,02	− 2,31	− 2,22
Sirius	1	16 27 4,7A.	+ 5,17	+1,04	+6,12	+ 7,81	+ 5,92
Caſtor	2	32 18 32,0B.	− 7,02	−0,04	−9,42	− 0,28	− 2,02
Procyon	1.2	5 43 25,6	− 7,59	−0,95	−3,68	− 2,50	− 3,28
Pollux	2	28 29 34,3	− 7,93	0,00	−6,06	− 1,62	− 2,06
Alphard	2	7 48 19,3A.	+15,24	−0,14	+1,70	+ 3,30	+ 4,40
Regulus	1	12 55 50,5B.	−17,27	+0,08	−3,78	− 2,08	− 2,68
Denebola	1.2	15 40 45,4	−19,97	−0,07	−0,98	+ 0,39	− 2,58
β Virginis	3	2 52 53,3	−19,98	−0,24	−3,54	− 2,22	− 3,34
Spica	1	10 7 14,6A.	+18,99	−0,19	+0,90	+ 6,18	+ 4,70
Arcturus	1	20 13 14,6B.	−17,07	−1,72	+2,22	− 3,30	− 2,38
1 ad α Librae	6	15 9 41,9A.	+15,37	−0,18	. . .	+ 8,20	+ 5,48
2 ad α Librae	2	15 12 26,0	+15,36	−0,15	−1,68	+ 7,85	+ 5,52
Gemma	2.3	27 23 24,5B.	−12,46	−0,03	−0,08	− 0,08	− 2,18
α Serpentis	2	7 3 35,4	−11,89	+0,19	−0,80	− 5,26	− 3,20
Antares	1	25 58 31,2A.	+ 8,69	−0,26	−1,54	+11,24	+ 9,16
α Herculis	2	14 37 44,4B.	− 4,71	+0,23	. .	− 5,33	− 2,66
α Ophiuchi	2	12 43 0,0	− 2,99	−0,05	+1,92	− 3,05	− 2,78
Wega	1	38 36 24,7	+ 2,64	+0,27	+0,82	+ 2,97	− 1,78
γ Aquilae	3	10 8 33,2	+ 8,22	+0,16	+0,16	− 4,00	− 3,04
Atair	1.2	8 21 26,2	+ 8,56	+0,54	−2,00	− 3,25	− 3,20
β Aquilae	3.4	5 55 27,0	+ 8,91	−0,35	+1,22	− 3,16	− 3,18
1 ad α Capric.	3	13 6 22,9A.	−10,53	−0,28	+4,88	+ 7,01	+ 5,18
2 ad α Capric.	3	13 8 41,6	−10,56	−0,26	+2,96	+ 5,63	+ 5,16
Deneb	1.2	44 34 43,6B.	+12,53	+0,03	+2,02	+ 2,10	− 1,48
α Aquarii	3	1 16 25,1A.	−17,17	−0,19	+0,58	+ 4,83	+ 3,78
Fomahand	1.2	30 39 52,7	−19,04	−0,06	+4,10	+ 7,58	+ 13,10
α Pegasi	2	14 8 41,8B.	+19,25	+0,18	+0,06	− 4,52	− 2,74
α Andromedae	2	27 59 54,2	+20,05	−0,06	−4,62	− 3,18	− 2,12

Argum. pro Aberrat. et Nutat.		γ PEGASI. 2.		α ARIETIS. 2. 3.		α CETI, Menkar. 2.		α TAVRI, Aldebaran. 1.	
Long. ☉ et Nod. ☾		Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +
☌	°	"	"	"	"	"	"	"	"
0	0	12,21	20,12	15,81	24,68	12,69	26,57	16,80	28,82
	10	11,47	18,88	14,84	23,51	12,64	25,56	16,51	28,16
	20	11,00	17,67	13,90	22,24	12,81	24,37	16,32	27,28
1	0	10,79	16,51	13,24	20,91	13,16	23,05	16,22	26,17
	10	10,89	15,47	12,59	19,56	13,84	21,65	16,20	24,88
	20	11,24	14,58	12,24	18,19	14,64	20,19	16,30	23,55
2	0	11,85	13,85	12,12	16,90	15,59	18,72	16,50	21,89
	10	12,71	13,31	12,24	15,69	16,69	17,29	16,82	20,27
	20	13,78	12,96	12,63	14,64	17,87	15,96	17,23	18,68
3	0	15,06	12,85	13,19	13,72	19,15	14,74	17,72	17,09
	10	16,50	12,91	14,03	13,00	20,44	13,69	18,29	15,61
	20	18,04	13,21	15,02	12,50	21,70	12,81	18,91	14,26
4	0	19,63	13,71	16,14	12,21	22,93	12,16	19,56	13,07
	10	21,23	14,42	17,39	12,19	24,05	11,75	20,25	12,09
	20	22,78	15,30	18,71	12,38	25,05	11,59	20,89	11,38
5	0	24,27	16,31	20,08	12,81	25,91	11,68	21,51	10,91
	10	25,62	17,43	21,46	13,47	26,59	12,02	22,08	10,75
	20	26,81	18,63	22,83	14,30	27,06	12,62	22,62	10,82
6	0	27,79	19,88	24,19	15,32	27,31	13,43	23,20	11,18
	10	28,53	21,12	25,16	16,49	27,56	14,44	23,49	11,84
	20	29,00	23,33	26,10	17,76	27,19	15,65	23,68	12,72
7	0	29,21	25,49	26,76	19,09	26,84	16,95	23,78	13,85
	10	29,11	24,55	27,41	20,44	26,16	18,35	23,80	15,15
	20	28,76	25,42	27,76	21,81	25,36	19,81	23,70	16,45
8	0	28,15	26,15	27,88	23,10	24,41	21,28	23,50	18,11
	10	27,29	26,69	27,76	24,31	23,31	22,71	23,18	19,73
	20	26,22	27,04	27,57	25,36	22,13	24,04	22,77	21,32
9	0	24,94	27,17	26,81	26,28	20,85	25,26	22,28	22,91
	10	23,50	27,09	25,97	27,00	19,56	26,31	21,71	24,39
	20	21,96	26,79	24,98	27,50	18,30	27,19	21,09	25,74
10	0	20,37	26,29	23,86	27,79	17,07	27,84	20,44	26,93
	10	18,77	25,58	22,61	27,81	15,95	28,25	19,77	27,91
	20	17,22	24,70	21,29	27,62	14,95	28,41	19,11	28,62
11	0	15,75	23,69	19,92	27,19	14,09	28,32	18,49	29,09
	10	14,38	22,57	18,54	26,53	13,41	27,98	17,92	29,27
	20	13,19	21,37	17,17	25,70	12,94	27,38	17,85	29,18
12	0	12,21	20,12	15,81	24,68	12,69	26,57	16,80	28,82

Summae harum quantitatum aberrationis et nutationis adde ſemper algebraice — 40"

Argum. pro Aberrat. et Nutat.	α AVRIGAE, Capella. 1.		β ORIONIS, Rigel. 1.		β TAVRI. 2.		α ORIONIS. 1.	
Long. ☉ et Nod. ☾	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +
☌ °	"	"	"	"	"	"	"	"
0 0	27,30	29,33	30,60	10,63	21,50	29,43	14,38	29,62
10	26,56	28,88	30,34	11,07	21,20	29,05	14,43	29,38
20	25,63	28,14	29,75	11,80	20,80	28,37	14,64	28,87
1 0	24,50	27,18	28,86	12,75	20,39	27,45	15,03	28,09
10	23,24	26,00	27,69	13,92	19,95	26,31	15,56	27,06
20	21,90	24,62	26,28	15,28	19,52	24,97	16,23	25,80
2 0	20,50	23,09	24,70	16,79	19,12	23,46	17,02	24,38
10	19,08	21,49	22,97	18,41	18,72	21,86	17,90	22,83
20	17,70	19,85	21,14	20,05	18,36	20,21	18,85	21,19
3 0	16,37	18,21	19,29	21,69	18,06	18,56	19,82	19,51
10	15,16	16,61	17,45	23,31	17,78	16,94	20,79	17,86
20	14,10	15,11	15,69	24,81	17,54	15,41	21,75	16,26
4 0	13,22	13,76	14,07	26,17	17,53	14,01	22,66	14,77
10	12,54	12,62	12,63	27,33	17,51	12,83	23,48	13,45
20	12,09	11,68	11,42	28,28	17,56	11,82	24,19	12,33
5 0	11,88	11,02	10,46	28,97	17,69	11,09	24,78	11,43
10	11,91	10,61	9,78	29,38	17,88	10,64	25,23	10,79
20	12,69	10,49	9,42	29,52	18,13	10,43	25,51	10,44
6 0	12,70	10,67	9,40	29,37	18,50	10,56	25,62	10,48
10	13,44	11,12	9,66	28,93	18,80	10,95	25,57	10,62
20	14,37	11,86	10,25	28,20	19,20	11,63	25,36	11,13
7 0	15,50	12,82	11,14	27,25	19,61	12,55	24,97	11,91
10	16,76	14,00	12,31	26,08	20,05	13,69	24,44	12,94
20	18,10	15,38	13,72	24,72	20,48	15,03	23,77	14,20
8 0	19,50	16,91	15,30	23,21	20,88	16,54	22,98	15,62
10	20,92	18,51	17,03	21,59	21,28	18,14	22,10	17,17
20	22,30	20,15	18,86	19,95	21,64	19,79	21,15	18,81
9 0	23,63	21,79	20,71	18,31	21,94	21,44	20,18	20,49
10	24,84	23,39	22,55	16,69	22,22	23,06	19,21	22,14
20	25,90	24,89	24,31	15,19	22,46	24,59	18,25	23,74
10 0	26,78	26,24	25,93	13,83	22,47	25,99	17,34	25,23
10	27,46	27,38	27,37	12,67	22,49	27,17	16,52	26,55
20	27,91	28,32	28,58	11,72	22,44	28,18	15,81	27,67
11 0	28,12	28,98	29,54	11,03	22,31	28,91	15,22	28,57
10	28,09	29,39	30,22	10,62	22,12	29,36	14,77	29,21
20	27,31	29,51	30,58	10,48	21,87	29,57	14,49	29,56
12 0	27,30	29,33	30,60	10,63	21,50	29,43	14,38	29,62

Summae harum quantitatum aberrationis et nutationis adde ſemper algebraice — 40"

Argum. pro Aberrat. et Nutat.	α CANIS MAJ. Sirius. 1.		α GEMINORVM, Castor. 1. 2.		α CANIS MIN: Procyon. 1. 2.		β GEMINORVM, Pollux. 2.	
Long. ☉ et Nod. ☾	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +	Aberrat. in temp. +	Nutatio in temp. +
0s 0	32,89	10,49	22,47	29,04	13,70	28,92	21,04	28,87
10	32,86	10,42	23,07	29,33	13,92	29,26	21,69	29,11
20	32,45	10,67	23,62	29,34	14,33	29,32	22,29	29,30
1 0	31,65	11,18	24,03	29,08	14,92	28,09	22,83	29,10
10	30,47	11,98	24,35	28,55	15,67	28,58	23,26	28,61
20	28,98	13,02	24,54	27,74	16,54	27,83	23,61	27,88
2 0	27,25	14,25	24,53	26,69	17,51	26,81	23,85	26,90
10	25,27	15,67	24,41	25,43	18,55	25,60	23,94	25,70
20	23,13	17,24	24,13	24,55	19,65	24,23	23,96	24,34
3 0	20,90	18,86	23,79	22,51	20,76	22,72	23,82	22,83
10	18,65	20,54	23,51	20,91	21,85	21,12	23,60	21,25
20	16,44	22,18	22,70	19,28	22,89	19,50	23,27	19,65
4 0	14,32	23,77	22,03	17,64	23,82	17,90	22,88	18,04
10	12,38	25,25	21,31	16,12	24,64	16,35	22,35	16,48
20	10,68	26,56	20,54	14,69	25,33	15,90	21,68	15,05
5 0	9,27	27,67	19,76	13,44	25,84	13,63	20,99	13,75
10	8,18	28,44	18,98	12,38	26,18	12,55	20,32	12,66
20	7,45	29,17	18,26	11,54	26,33	11,69	19,66	11,79
6 0	7,11	29,51	17,53	10,96	26,30	11,08	18,96	11,15
10	7,14	29,58	16,93	10,67	26,08	10,74	18,31	10,89
20	7,55	29,33	16,38	10,66	25,67	10,68	17,71	10,70
7 0	8,35	28,82	15,97	10,92	25,08	10,91	17,17	10,90
10	9,53	28,02	15,67	11,45	24,33	11,42	16,74	11,39
20	11,02	26,98	15,46	12,26	23,46	12,17	16,39	12,12
8 0	12,77	25,75	15,47	13,31	22,49	13,19	16,17	13,10
10	14,75	24,33	15,59	14,55	21,45	14,40	16,06	14,30
20	16,87	22,76	15,87	15,65	20,55	15,77	16,04	15,66
9 0	19,10	21,14	16,21	17,49	19,24	17,28	16,18	17,17
10	21,35	19,46	16,69	19,09	18,15	18,88	16,40	18,75
20	23,56	17,82	17,30	20,72	17,11	20,50	16,73	20,35
10 0	25,68	16,25	17,97	22,36	16,18	22,10	17,12	21,90
10	27,62	14,75	18,69	23,88	15,36	23,65	17,65	23,52
20	29,32	13,44	19,46	25,31	14,67	25,10	18,32	24,95
11 0	30,75	12,35	20,24	26,56	14,16	26,37	19,01	26,25
10	31,82	11,44	21,02	27,62	13,82	27,45	19,68	27,34
20	32,55	10,85	21,74	28,46	13,67	28,51	20,34	28,21
12 0	32,89	10,49	22,47	29,04	13,70	28,92	21,04	28,87

Summae harum quantitatum aberrationis et nutationis adde semper algebraice — 4″

Argum. pro Aberrat. et Nutat.	α HYDRAE, Alphard. 2.		α LEONIS, Regulus. 1.		β LEONIS, Denebola 1. 2.		β VIRGINIS. 5.	
Long. ☉ et Nod. ☾	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +
♋ °	"	"	"	"	"	"	"	"
0	29,62	13,74	14,24	24,90	12,69	20,90	12,02	20,84
10	29,83	12,88	15,04	25,92	13,76	22,12	12,31	22,06
20	29,75	12,24	15,94	26,73	14,95	23,29	12,84	23,22
1 0	29,59	11,84	16,96	27,35	16,39	24,35	13,60	24,27
10	28,73	11,69	18,12	27,76	17,91	25,29	14,52	25,22
20	27,80	11,80	19,39	27,89	19,49	26,06	15,65	26,01
2 0	26,63	12,16	20,50	27,82	21,07	26,64	16,89	26,61
10	25,27	12,75	21,70	27,48	22,63	27,02	18,22	27,00
20	23,74	13,55	22,91	26,95	24,10	27,20	19,61	27,17
3 0	22,09	14,56	23,90	26,18	25,45	27,17	21,01	27,16
10	20,38	15,73	24,82	25,23	26,64	26,89	22,39	26,90
20	18,66	17,03	25,68	24,13	27,62	26,41	23,69	26,43
4 0	16,99	18,42	26,36	22,90	28,38	25,73	24,87	25,76
10	15,40	19,86	26,72	21,58	28,87	24,89	25,88	24,93
20	13,95	21,30	26,94	20,20	29,08	23,91	26,77	23,95
5 0	12,70	22,70	26,94	18,83	29,06	22,79	27,41	22,85
10	11,66	24,02	26,73	17,50	28,72	21,59	27,85	21,65
20	10,88	25,22	26,34	16,25	28,14	20,34	28,03	20,40
6 0	10,38	26,26	25,76	15,10	27,31	19,10	27,98	19,16
10	10,17	27,12	24,96	14,08	26,24	17,88	27,69	17,94
20	10,25	27,76	24,06	13,27	25,05	16,71	27,16	16,78
7 0	10,61	28,16	23,04	12,65	23,81	15,65	26,40	15,73
10	11,27	28,31	21,88	12,24	22,09	14,71	25,48	14,78
20	12,20	28,20	20,70	12,11	20,51	13,94	24,35	13,99
8 0	13,37	27,84	19,50	12,18	18,93	13,36	23,11	13,39
10	14,73	27,25	18,30	12,52	17,37	12,98	21,78	13,00
20	16,26	26,45	17,09	13,05	15,90	12,80	20,39	12,83
9 0	17,91	25,44	16,10	13,82	14,55	12,83	18,99	12,84
10	19,62	24,27	15,18	14,77	13,36	13,11	17,61	13,10
20	21,34	22,97	14,32	15,87	12,38	13,59	16,31	13,57
10 0	23,01	21,58	13,64	17,10	11,62	14,27	15,13	14,24
10	24,60	20,14	13,28	18,42	11,13	15,11	14,12	15,07
20	26,05	18,70	13,06	19,80	10,92	16,09	13,23	16,05
11 0	27,30	17,30	13,06	21,17	10,94	17,21	12,59	17,15
10	28,34	15,98	13,27	22,50	11,28	18,41	12,15	18,35
20	29,12	14,78	13,66	23,75	11,86	19,66	11,97	19,60
12 0	29,62	13,74	14,24	24,90	12,69	20,90	12,02	20,84

Summae harum quantitatum aberrationis et nutationis adde ſemper algebraice — 40"

Argum. pro Aberrat. et Nutat.		α VIRGINIS, Spica. 1.		α BOOTIS, Arcturus. 1.		1 ad α LIBRAE. 6.		2 ad α LIBRAE. 2.	
Long. ☉ et Nod. ☾		Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +
☌	°	″	″	″	″	″	″	″	″
0	0	26,90	23,06	9,06	14,94	24,69	26,18	24,68	26,20
	10	27,38	21,85	10,26	16,09	25,33	25,13	25,30	25,15
	20	27,63	20,57	11,76	17,34	25,79	23,91	25,76	23,94
1	0	27,65	19,26	13,51	18,68	26,09	22,60	26,07	22,62
	10	27,44	18,00	15,45	20,05	26,20	21,19	26,18	21,21
	20	27,02	16,78	17,54	21,44	26,12	19,76	26,11	19,78
2	0	26,34	15,64	19,70	22,77	25,84	18,33	25,85	18,34
	10	25,52	14,66	21,86	24,05	25,41	16,96	25,41	16,96
	20	24,51	13,82	23,97	25,14	24,81	15,66	24,80	15,66
3	0	23,36	13,19	25,96	26,11	24,04	14,51	24,06	14,50
	10	22,12	12,78	27,78	26,91	23,18	13,52	23,20	13,50
	20	20,80	12,56	29,35	27,49	22,23	12,73	22,23	12,70
4	0	19,46	12,52	30,63	27,84	21,19	12,16	21,18	12,13
	10	18,16	12,73	31,61	27,95	20,10	11,83	20,12	11,80
	20	16,87	13,29	32,21	27,82	19,02	11,75	19,06	11,72
5	0	15,71	13,94	32,46	27,46	17,97	11,91	18,01	11,88
	10	14,66	14,79	32,33	26,87	16,98	12,31	17,02	12,29
	20	13,79	15,79	31,82	26,06	16,09	12,97	16,11	12,94
6	0	13,10	16,94	30,94	25,06	15,31	13,82	15,32	13,80
	10	12,62	18,15	29,74	23,91	14,67	14,87	14,70	14,86
	20	12,37	19,43	28,24	22,66	14,21	16,09	14,24	16,06
7	0	12,35	20,74	26,49	21,32	13,91	17,40	13,93	17,38
	10	12,56	22,00	24,55	19,95	13,80	18,81	13,82	18,79
	20	12,98	23,22	22,46	18,56	13,88	20,24	13,89	20,22
8	0	13,06	24,36	20,30	17,23	14,16	21,67	14,15	21,66
	10	14,48	25,34	18,14	15,99	14,59	23,04	14,59	23,04
	20	15,49	26,18	16,03	14,86	15,19	24,34	15,20	24,34
9	0	16,64	26,81	14,04	13,89	15,96	25,49	15,94	25,50
	10	17,88	27,22	12,22	13,09	16,82	26,48	16,80	26,50
	20	19,20	27,44	10,65	12,51	17,77	27,27	17,77	27,30
10	0	20,54	27,48	9,37	12,16	18,81	27,84	18,82	27,87
	10	21,84	27,27	8,39	12,05	19,90	28,17	19,88	28,20
	20	23,13	26,71	7,79	12,18	20,98	28,25	20,94	28,28
11	0	24,29	26,06	7,54	12,54	22,03	28,09	21,99	28,12
	10	25,34	25,21	7,67	13,13	23,02	27,69	22,98	27,71
	20	26,21	24,21	8,18	13,94	23,91	27,03	23,89	27,06
12	0	26,90	23,06	9,06	14,94	24,69	26,18	24,68	26,20

Summae harum quantitatum aberrationis et nutationis adde ſemper algebraice — 40″

Argum. pro Aberrat. et Nutat.	α CORONAE BOR. Gemma. 2.		α SERPENTIS. 2.		α SCORPII, Antares. 1.		α HERCVLIS. 2. 3.	
Long. ☉ et Nod. ☾	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +
s °	"	"	"	"	"	"	"	"
0 0	6,18	12,44	10,16	12,22	19,93	28,69	7,65	10,63
10	7,38	13,33	10,56	13,08	20,60	28,02	8,03	11,07
20	8,98	14,43	11,25	14,17	21,25	27,09	8,77	11,79
1 0	10,94	15,70	12,21	15,42	21,85	25,96	9,88	12,73
10	13,16	17,10	13,41	16,80	22,41	24,65	11,32	13,89
20	15,59	18,57	14,79	18,28	22,90	23,21	12,99	15,26
2 0	18,12	20,09	16,34	19,20	23,29	21,66	14,87	16,78
10	20,72	21,61	18,02	21,33	23,58	20,06	16,91	18,39
20	23,30	23,09	19,74	22,85	23,77	18,46	19,05	20,02
3 0	25,79	24,48	21,48	24,27	23,85	16,91	21,21	21,66
10	28,10	25,71	23,17	25,55	23,81	15,44	23,32	23,28
0	30,17	26,79	24,76	26,65	23,64	14,12	25,35	24,78
4 0	31,93	27,65	26,21	27,57	23,36	12,97	27,22	26,15
10	33,33	28,28	27,46	28,26	22,99	12,04	28,85	27,31
20	34,31	28,67	28,50	28,70	22,53	11,35	30,23	28,26
5 0	34,85	28,78	29,27	28,86	21,99	10,93	31,29	28,94
10	34,96	28,62	29,76	28,75	21,39	10,78	32,02	29,37
20	34,61	28,22	29,95	28,38	20,74	10,91	32,37	29,52
6 0	33,82	27,56	29,84	27,78	20,07	11,32	32,35	29,37
10	32,62	26,67	29,44	26,92	19,40	11,98	31,97	28,93
20	31,02	25,57	28,75	25,83	18,75	12,91	31,23	28,21
7 0	29,06	24,30	27,79	24,58	18,15	14,04	30,12	27,27
10	26,84	22,90	26,59	23,20	17,59	15,35	28,68	26,11
20	24,41	21,43	25,21	21,72	17,10	16,79	27,01	24,74
8 0	21,88	19,91	23,66	20,20	16,71	18,34	25,13	23,22
10	19,28	18,39	21,98	18,67	16,42	19,94	23,09	21,61
20	16,70	16,91	20,26	17,15	16,23	21,54	20,95	19,98
9 0	14,21	15,52	18,52	15,75	16,15	23,09	18,79	18,34
10	11,90	14,29	16,85	14,45	16,19	24,56	16,68	16,72
20	9,83	13,21	15,24	13,35	16,36	25,88	14,65	15,22
10 0	8,07	12,35	13,79	12,43	16,64	27,03	12,78	13,85
10	6,67	11,72	12,54	11,74	17,01	27,96	11,15	12,69
20	5,69	11,33	11,50	11,30	17,47	28,65	9,77	11,74
11 0	5,14	11,22	10,73	11,14	18,01	27,07	8,71	11,06
10	5,04	11,38	10,24	11,25	18,61	29,22	7,98	10,63
20	5,39	11,78	10,05	11,62	19,26	29,09	7,63	10,48
12 0	6,18	12,44	10,16	12,22	19,93	28,68	7,65	10,63

Summae harum quantitatum aberrationis et nutationis adde ſemper algebraice — 40"

Argum. pro Aberrat. et Nutat.		α OPHIVCHI. 2.		α LYRAE, Wega 1.		γ AQVILAE. 5.		α AQVILAE, Atair. 1. 2.	
Long. ☉ et Nod. ☾		Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +
0ˢ	0	8,07	10,46	2,23	10,46	9,07	11,21	9,58	11,27
	10	8,37	10,79	2,21	10,42	8,98	10,85	9,51	10,88
	20	9,03	11,41	2,72	10,70	9,24	10,73	0,76	10,75
1	0	10,03	12,29	3,78	11,27	9,81	10,91	10,54	10,91
	10	11,51	13,39	5,34	12,09	10,69	11,38	11,20	11,54
	20	12,86	14,68	7,32	13,15	11,86	12,08	12,32	12,04
2	0	14,61	16,15	9,69	14,42	13,28	13,04	13,69	12,98
	10	16,55	17,74	12,56	15,86	14,90	14,22	15,25	14,14
	20	18,59	19,58	15,28	17,43	16,67	15,57	16,95	15,47
3	0	20,67	21,06	18,35	19,81	18,54	17,06	18,74	16,94
	10	22,72	22,70	21,46	20,75	20,46	18,63	20,58	18,49
	20	24,71	24,27	24,52	22,39	22,36	20,24	22,39	20,10
4	0	26,54	25,70	27,44	23,96	24,19	21,84	24,13	21,70
	10	28,15	26,95	30,16	25,43	25,90	23,39	25,75	23,25
	20	29,51	27,99	32,55	26,73	27,43	24,85	27,19	24,70
5	0	30,58	28,80	34,55	27,83	28,73	26,14	28,42	26,02
	10	31,38	29,33	36,12	28,67	29,76	27,25	29,38	27,15
	20	31,85	29,59	37,22	29,24	30,50	28,14	30,06	28,06
6	0	31,93	29,54	37,77	29,54	30,93	28,79	30,42	28,73
	10	31,65	29,21	37,79	29,38	31,02	29,17	30,49	29,12
	20	30,97	28,59	37,28	29,30	30,76	29,27	30,24	29,25
7	0	29,97	27,71	36,22	28,73	30,19	29,09	29,66	29,09
	10	28,69	26,61	34,34	27,91	29,31	28,62	28,80	28,66
	20	27,14	25,32	32,68	26,85	28,14	27,92	27,68	27,96
8	0	25,39	23,85	30,31	25,58	26,72	26,96	26,31	27,02
	10	23,45	22,26	27,64	24,14	25,10	25,78	24,75	25,86
	20	21,41	20,62	24,72	22,57	23,33	24,43	23,05	24,55
9	0	19,33	18,94	21,65	20,19	21,40	22,94	21,26	23,06
	10	17,28	17,30	18,54	19,25	19,54	21,37	19,42	21,51
	20	15,29	15,75	15,48	17,61	17,64	19,76	17,61	19,90
10	0	13,46	14,30	12,56	16,04	15,81	18,16	15,87	18,30
	10	11,85	13,05	9,84	14,57	14,10	16,61	14,25	16,75
	20	10,49	12,01	7,45	13,27	12,57	15,17	12,81	15,30
11	0	9,42	11,20	5,45	12,17	11,27	13,86	11,58	13,98
	10	8,62	10,67	3,88	11,53	10,24	12,75	10,62	12,85
	20	8,15	10,41	2,78	10,76	9,50	11,86	9,94	11,94
12	0	8,07	10,46	2,23	10,46	9,07	11,21	9,58	11,27

Summae harum quantitatum aberrationis et nutationis adde ſemper algebraice — 40″

Argum. pro Aberrat. et Nutat.		β AQVILAE. 3. 4.		1 ad α CAPRI-CORNI. 3.		2 ad α CAPRI-CORNI. 3.		α CYGNI, Deneb. 1. 2.	
Long. ☉ et Nod. ☾		Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +
s	°	"	"	"	"	"	"	"	"
0	0	10,27	11,35	24,28	28,24	24,28	28,21	4,04	12,48
	10	10,25	10,94	23,80	28,78	23,79	28,76	2,73	11,81
	20	10,52	10,80	23,20	29,03	23,18	29,00	1,97	11,39
1	0	11,10	10,93	22,51	29,01	22,49	29,01	1,75	11,23
	10	11,94	11,32	21,74	28,72	21,72	28,73	2,08	11,34
	20	13,02	11,90	20,91	28,17	20,89	28,18	2,97	11,75
2	0	14,32	12,91	20,06	27,37	20,04	27,39	4,36	12,38
	10	15,79	14,04	19,21	26,34	19,19	26,37	6,23	13,24
	20	17,39	15,35	18,39	25,12	18,37	25,16	8,51	14,30
3	0	19,07	16,79	17,60	23,74	17,59	23,79	11,13	15,53
	10	20,78	18,36	16,90	22,25	16,88	22,31	14,03	16,91
	20	22,46	19,96	16,28	20,69	16,26	20,76	17,11	18,38
4	0	24,07	21,55	15,79	19,11	15,77	19,17	20,28	19,90
	10	25,56	23,09	15,41	17,56	15,40	17,61	23,44	21,42
	20	26,87	24,56	15,18	16,09	15,17	16,14	26,51	22,89
5	0	27,97	25,88	15,10	14,73	15,09	14,78	29,38	24,29
	10	28,84	27,03	15,16	13,54	15,16	13,59	31,95	25,56
	20	29,43	28,95	15,37	12,54	15,37	12,58	34,16	26,65
6	0	29,73	28,65	15,72	11,76	15,72	11,79	35,96	27,52
	10	29,75	29,06	16,20	11,22	16,21	11,24	37,27	28,19
	20	29,48	29,20	16,80	10,97	16,82	11,00	38,03	28,61
7	0	28,90	29,07	17,49	10,99	17,51	10,99	38,25	28,77
	10	28,06	28,68	18,26	11,28	18,28	11,27	37,92	28,66
	20	26,98	28,01	19,09	11,83	19,11	11,82	37,03	28,27
8	0	25,68	27,09	19,94	12,63	19,96	12,61	35,64	27,62
	10	24,21	25,96	20,79	13,66	20,81	13,63	33,77	26,76
	20	22,61	24,65	21,61	14,88	21,63	14,84	31,49	25,70
9	0	20,93	23,21	22,40	16,26	22,41	16,21	28,87	24,47
	10	19,22	21,64	23,10	17,75	23,12	17,69	25,97	23,09
	20	17,54	20,04	23,72	19,31	23,74	19,24	22,89	21,62
10	0	15,93	18,45	24,21	20,89	24,23	20,83	19,72	20,10
	10	14,44	16,91	24,59	22,44	24,60	22,39	16,56	18,58
	20	13,13	15,44	24,82	23,91	24,83	23,86	13,49	17,11
11	0	12,03	14,12	24,90	25,27	24,91	25,22	10,62	15,71
	10	11,16	12,97	24,84	26,46	24,84	26,41	8,05	14,44
	20	10,57	11,05	24,63	27,46	24,63	27,42	5,84	13,35
12	0	10,27	11,35	24,28	28,24	24,28	28,21	4,04	12,48

Summae harum quantitatum aberrationis et nutationis adde ſemper algebraice — 40"

Argum. pro Aberrat. et Nutat.		α AQVARII. 3.		α PISCIS AVSTR. Fomalhand. 1. 2.		α PEGASI, Markab. 2.		α ANDROMEDAE 2.	
Long. ☉ et Nod. ☾		Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +	Aberrat. in ſpat. +	Nutatio in ſpat. +
0s	0	27,85	24,99	23,92	23,02	10,91	17,30	12,79	19,94
	10	27,67	25,99	22,16	24,17	10,22	16,14	11,26	18,70
	20	27,25	26,79	20,31	25,17	9,82	15,11	9,98	17,50
1	0	26,62	27,41	18,48	26,02	9,74	14,23	9,01	16,37
	10	25,78	27,80	16,71	26,69	9,98	13,52	8,37	15,34
	20	24,76	27,94	15,03	27,17	10,52	12,99	8,08	14,46
2	0	23,59	27,84	13,48	27,41	11,33	12,69	8,16	13,75
	10	22,33	27,49	12,12	27,43	12,42	12,61	8,60	13,24
	20	20,99	26,93	11,02	27,22	13,74	12,75	9,38	12,92
3	0	19,62	26,15	10,20	26,80	15,25	13,11	10,59	12,82
	10	18,25	25,18	9,66	26,18	16,91	13,68	11,90	12,95
	20	16,95	24,06	9,45	25,36	18,66	14,45	13,54	13,29
4	0	15,75	22,84	9,55	24,38	20,45	15,39	15,37	13,81
	10	14,65	21,51	9,96	23,27	22,23	16,46	17,35	14,54
	20	13,73	20,13	10,69	22,05	23,92	17,64	19,40	15,43
5	0	13,00	18,75	11,71	20,77	25,51	18,90	21,48	16,46
	10	12,48	17,41	12,96	19,48	26,93	20,18	23,50	17,59
	20	12,19	16,16	14,43	18,21	28,13	21,45	25,44	18,81
6	0	12,15	15,01	16,08	16,98	29,09	22,70	27,21	20,06
	10	12,33	14,01	17,84	15,83	29,78	23,86	28,74	21,30
	20	12,75	13,21	19,69	14,83	30,18	24,89	30,02	22,50
7	0	13,38	12,59	21,52	13,98	30,26	25,77	30,99	23,63
	10	14,22	12,20	23,29	13,31	30,02	26,48	31,63	24,66
	20	15,24	12,06	24,97	12,83	29,48	27,01	31,92	25,54
8	0	16,41	12,16	26,52	12,59	28,67	27,31	31,84	26,25
	10	17,67	12,51	27,88	12,57	27,58	27,39	31,40	26,76
	20	19,01	13,07	28,98	12,78	26,26	27,25	30,62	27,08
9	0	20,38	13,85	29,80	13,20	24,75	26,89	29,51	27,18
	10	21,75	14,82	30,34	13,82	23,09	26,32	28,10	27,05
	20	23,05	15,94	30,55	14,64	21,34	25,55	26,46	26,71
10	0	24,25	17,16	30,45	15,62	19,55	24,61	24,63	26,19
	10	25,35	18,49	30,04	16,73	17,78	23,54	22,65	25,46
	20	26,27	19,87	29,31	17,95	16,08	22,36	20,60	24,57
11	0	27,00	21,25	28,29	19,23	14,49	21,10	18,52	23,54
	10	27,52	22,59	27,04	20,52	13,07	19,82	16,50	22,41
	20	27,81	23,84	25,57	21,79	11,87	18,55	14,56	21,19
12	0	27,85	24,99	23,92	23,02	10,91	17,30	12,79	19,94

Summae harum quantitatum aberrationis et nutationis adde ſemper algebraice — 40″

Æ media ſtellae polar. 1790 = { 0ᴴ 50′ 15,″796 / 12° 33′ 56,″943 } Declin. med. = 88° 11′ 10,″350

Long. ☉ ☾	Aberrat. in Æ. in ſpatio.	Nutatio in Æ. in ſpatio.	Aberrat. in Decl.	Nutatio in Decl.
♋ 0° VI	— 9′ 32,″93 +	— 4′ 57,″35 +	+ 3,″78 —	+ 2,″10 —
10	9 48,41	5 4,27	0,30	0,85
20	9 46,01	5 1,96	— 3,20 +	— 0,45 +
I 0 VII	9 25,79	4 50,45	6,60	1,69
10	8 48,39	4 30,13	9,79	2,90
20	7 54,93	4 1,60	12,69	4,02
II 0 VIII	6 47,04	3 25,74	15,21	5,02
10	5 26,79	2 43,62	17,27	5,87
20	3 56,63	1 56,50	18,80	6,54
III 0 IX	2 19,20	1 5,89	19,76	7,01
10	— 0 37,60 +	— 0 13,25 +	20,12	7,27
20	+ 1 5,14 —	+ 0 39,78 —	19,87	7,30
IV 0 X	2 45,89	1 31,61	19,01	7,12
10	4 21,62	2 20,67	17,57	6,72
20	5 49,41	3 5,44	15,60	6,11
V 0 XI	7 6,56	3 44,57	13,16	5,32
10	8 10,73	4 16,89	10,32	4,37
20	9 0,04	4 41,39	7,16	3,28

Æ media ſtellae polar. 1800 = { 0ᴴ 52′ 21,″000 / 13° 5′ 15,″000 } Declin. med. = 88° 14′ 25,″791

Long. ☉ ☾	Aberrat. in Æ. in ſpatio.	Nutatio in Æ. in ſpatio.	Aberrat. in Decl.	Nutatio in Decl.
♋ 0° VI	— 9′ 49,″42 +	— 5′ 5,″92 +	+ 3,″96 —	+ 2,″18 —
10	10 6,40	5 13,34	0,47	0,94
20	10 4,95	5 11,22	— 3,02 +	— 0,34 +
I 0 VII	9 45,16	4 59,68	6,43	1,61
10	9 7,53	4 39,01	9,64	2,82
20	8 13,30	4 9,87	12,56	3,95
II 0 VIII	7 4,09	3 33,14	15,10	4,97
10	5 41,99	2 49,93	17,18	5,83
20	4 9,48	2 1,56	18,73	6,51
III 0 IX	2 29,39	1 9,49	19,72	7,00
10	— 0 44,77 +	— 0 15,31 +	20,11	7,27
20	+ 1 1,21 —	+ 0 39,33 —	19,88	7,32
IV 0 X	2 45,32	1 32,78	19,05	7,14
10	4 24,42	2 23,41	17,65	6,76
20	5 55,47	3 9,69	15,71	6,17
V 0 XI	7 15,74	3 50,19	13,29	5,39
10	8 22,76	4 23,71	10,47	4,45
20	9 14,52	4 49,21	7,32	3,37

Æ media stellae polar. 1810 = { 0H 54' 33,"166 / 15° 38' 17,"489 } Declin. med. = 88° 17' 40,"680

Long. ☽ Nod. ☾	Aberrat. in Æ. in spatio.	Nutatio in Æ. in spatio.	Aberrat. in Decl.	Nutatio in Decl.
♋ 0° VI	− 10' 6,"75 +	− 5' 14,"93 +	+ 4,"14 −	+ 2,"28 −
10	10 25,40	5 22,60	0,65	1,05
20	10 25,05	5 21,05	− 2,84 +	− 0,25 +
I 0 VII	10 5,71	5 9,55	6,25	1,52
10	9 27,96	4 48,44	9,48	2,74
20	8 32,97	4 18,67	12,41	3,88
II 0 VIII	7 22,36	3 41,06	14,96	4,91
10	5 58,32	2 56,82	17,07	5,78
20	4 23,42	2 7,00	18,66	6,48
III 0 IX	2 40,50	1 13,39	19,68	6,98
10	− 0 52,70 +	− 0 17,62 +	20,09	7,27
20	+ 0 56,70 −	+ 0 38,70 −	19,90	7,34
IV 0 X	2 44,58	1 33,87	19,11	7,18
10	4 27,06	2 26,18	17,73	6,81
20	6 1,68	3 14,05	15,82	6,25
V 0 XI	7 25,23	3 56,02	13,42	5,46
10	8 35,23	4 30,82	10,62	4,52
20	9 29,66	4 57,40	7,50	3,45

Æ media stellae polar. 1820 = { 0H 56' 52,"960 / 14° 13' 14,"303 } Declin. med. = 88° 20' 55,"560

♋ 0° VI	− 10' 24,05 +	− 5' 24,"39 +	+ 4,"33 −	+ 2,"37 −
10	10 45,47	5 32,94	0,86	1,11
20	10 46,31	5 31,39	− 2,64 +	− 0,15 +
I 0 VII	10 27,58	5 19,81	6,06	1,45
10	9 49,77	4 58,50	9,30	2,66
20	8 53,99	4 28,06	12,26	3,81
II 0 VIII	7 42,00	3 49,53	14,84	4,84
10	6 16,01	3 4,01	16,96	5,73
20	4 38,58	2 12,89	18,58	6,44
III 0 IX	2 52,68	1 17,74	19,63	6,96
10	− 1 1,53 +	− 0 20,24 +	20,08	7,27
20	+ 0 51,48 −	+ 0 37,88 −	19,92	7,35
IV 0 X	2 42,95	1 34,86	19,16	7,22
10	4 29,44	2 28,97	17,82	6,86
20	6 7,74	3 18,53	15,94	6,29
V 0 XI	7 34,89	4 2,05	13,57	5,53
10	8 48,20	4 38,24	10,78	4,61
20	9 45,49	5 5,96	7,67	3,55

Catalogus

fixarum quarumdam ejusdem proxime aſcenſionis rectae et declinationis, ſed denominationis oppoſitae, ad inveſtigandam tubi culminatorii deviationem.

Nomen et Charact. ſtellar.	Ordo magn.	Aſcenſio recta media 1800. H ′ ″	Variatio annua. + ″	Declinat. media 1800. ° ′ ″	Variatio annua. ″
α Appar. Sculptor.	5	0 48 56,80	2,899	30 26 23,2 A	—19,58
60 σ^1 Piſcium	5.6	0 51 53,75	3,241	30 43 40,2 B	+19,52
90 ν Piſcium	5.6	1 8 30,44	3,255	26 12 35,3 B	+19,13
ε Appar. Sculpt.	5	1 36 15,60	2,795	26 3 21,6 A	—18,28
48 Andromedae	5.6	1 15 44,87	3,486	44 22 9,4 B	+18,94
γ Phoenicis	3	1 19 39,26	2,617	44 20 45,0 A	—18,83
39 Arietis	4	2 36 2,11	3,516	28 24 29,6 B	+15,56
γ^2 Fornacis	6	2 41 14,21	2,587	28 47 42,5 A	—15,26
9 Eridani	2.3	2 50 40,80	2,272	41 6 37,4 A	—14,72
26 β Perſei	2	2 55 12,65	3,841	40 10 29,2 B	+14,45
δ Fornacis	5	3 34 17,63	2,375	32 35 4,0 A	—11,89
42 n Perſei	6	3 36 55,98	3,751	32 27 58,1 B	+11,70
25 η Tauri	3	3 55 57,04	3,530	23 28 37,9 B	+11,80
27 Eridani	5	3 38 14,20	2,581	23 50 55,3 A	—11,61
34 γ Eridani	2.3	3 48 41,68	2,781	14 5 8,1 A	—10,88
87 α Tauri	1	4 24 27,23	3,415	16 5 44,7 B	+ 8,11
53 Eridani	4	4 29 1,18	2,739	14 42 11,3 A	— 7,74
54 Eridani	4	4 31 41,65	2,609	20 3 50,4 A	— 7,53
54 Perſei	6	4 7 27,15	3,857	34 4 15,0 B	+ 9,44
4 i Eridani	3.4	4 10 19,22	2,253	34 17 36,7 A	— 9,22
112 β Tauri	2	5 13 39,32	3,772	28 25 26,7 B	+ 4,02
γ^1 Columbae	6	5 29 22,39	2,366	27 59 44,0 A	— 2,67
9 β Leporis	4	5 19 40,80	2,557	20 55 41,8 A	— 3,51
11 α Leporis	3	5 23 54,35	2,634	17 58 27,2 A	— 3,14
123 ζ Tauri	3.4	5 25 41,35	3,568	21 0 27,0 B	+ 2,98
β Columbae	3	5 43 54,55	2,100	35 51 4,0 A	— 1,42
37 g Aurigae	4	5 46 4,89	4,072	37 11 0,3 B	+ 1,22
g Columbae	5	6 0 39,80	2,047	37 13 57,0 A	+ 0,06
44 κ Aurigae	4	6 2 37,66	3,818	29 33 23,5 B	— 0,22
1 ζ Canis maj.	3	6 12 37,75	2,292	29 58 55,9 A	+ 1,10
7 η Geminorum	4.5	6 2 48,10	3,615	22 33 5,4 B	— 0,24
13 μ Geminorum	3	6 10 51,29	3,616	22 36 9,7 B	— 0,94
2 β Canis maj.	2	6 13 53,20	2,632	17 52 2,4 A	+ 1 21
5 ξ^2 Canis maj.	5	6 26 39,82	2,504	22 48 48,8 A	+ 2,32

Catalogus

fixarum quarumdam ejusdem proxime ascensionis rectae et declinationis, sed denominationis oppositae, ad investigandam tubi culminatorii deviationem.

Nomen et Charact. Stellar.	Ordo magn.	Ascensio recta media 1800.	Variatio annua +	Declinat. media 1800.	Variatio annua
		H ′ ″	″	° ′ ″	″
24 Geminorum	3	6 26 9,07	3,455	16 35 26,7 B	— 2,28
9 α Canis maj.	1	6 36 19,85	2,641	16 27 4,1 A	+ 3,16
22 Canis maj.	3.4	6 53 45,00	2,582	27 39 24,0 A	+ 4,65
47 Geminorum	. . .	6 58 57,60	3,726	27 10 22,4 B	— 5,09
69 ι Geminorum	5	7 25 34,60	3,706	27 19 41,2 B	— 7,14
25 δ Canis maj.	3	7 0 15,06	2,431	26 5 1,8 A	+ 5,20
55 δ Geminorum	3.4	7 8 9,54	3,586	22 20 10,7 B	— 5,87
21 ε Canis maj.	2	6 50 45,54	2,349	28 42 29,7 A	+ 4,40
60 ι Geminorum	4	7 15 17,10	3,740	28 10 53,3 B	— 6,29
31 η Canis maj.	2.3	7 16 10,40	2,365	28 55 19,5 A	+ 6,53
64 B¹ Geminor.	5.6	7 16 51,40	3,746	28 31 0,8 B	— 6,50
65 B² Geminor.	5.6	7 17 20,60	3,740	28 18 58,0 B	— 6,65
78 β Geminor.	2	7 33 3,08	3,677	28 29 48,5 B	— 7,90
3 τ Navis	5	7 35 46,47	2,401	28 29 4,1 A	+ 8,13
77 κ Geminor.	4	7 32 20,93	3,631	24 51 55,2 B	— 7,85
7 ξ Navis	4	7 40 53,00	2,515	24 21 50,0 A	+ 8,53
10 N Urfae maj.	4.5	8 47 35,90	3,975	42 33 53,0 B	—13,38
λ Argus in velis	2.3	9 0 38,18	2,195	42 37 44,8 A	+ 14,20
36 Lyncis	5.6	9 0 39,50	3,971	44 1 58,6 B	—14,20
9 Argus in velis	5.6	9 3 48,73	2,164	44 3 9,6 A	+ 14,39
40 Lyncis	4.5	9 8 49,53	3,702	35 15 46,5 B	—14,69
ε Antl. Pneum.	5.6	9 20 50,54	2,462	35 4 50,4 A	+ 15,39
q Argus in velis	4	9 6 20,82	2,507	41 7 56,6 A	+ 17,01
34 α Urfae maj.	3	10 10 21,20	3,625	42 30 1,9 B	—17,77
7 α Hydr. et Crat.	4	10 50 2,27	2,957	17 14 7,2 A	+ 19,10
70 θ Leonis	3	11 3 43,15	3,150	16 31 17,0 B	—19,43
11 β Hydr. et Cr.	3.4	11 1 49,80	2,927	21 44 6,0 A	+ 19,38
68 δ Leonis	3	11 3 26,60	3,195	21 37 4,5 B	—19,42
ο Centauri	5.6	11 41 11,47	2,956	44 3 31,6 A	+ 19,96
67 Urfae maj.	5	11 51 54,72	3,107	44 9 22,4 B	—20,01
1 α Corvi	4	11 58 6,96	3,056	23 36 42,9 A	+ 20,02
23 K Berenices	4.5	12 24 51,72	2,999	23 44 1,5 B	—19,91
N Centauri	5.6	12 42 24,55	3,259	59 5 9,8 A	+ 19,68
12 Can. Venatic.	2.3	12 46 38,58	2,842	39 24 7,0 B	—19,61
39 Berenices	5	12 56 35,60	2,927	22 13 55,1 B	—19,42
1 ψ Hydrae	4.5	12 58 18,10	3,198	22 2 37,0 A	+ 19,38
2 γ Hydrae	3.4	13 8 4,10	3,221	22 6 37,8 A	+ 19,15

Catalogus

fixarum quarumdam ejusdem proxime ascensionis rectae et declinationis, sed denominationis oppositae, ad investigandam tubi culminatorii deviationem.

Nomen et Charact. stellar.	Ordo magn.	Ascensio recta media 1800.	Variatio annua. +	Declinat. media 1800.	Variatio annua.
		H ′ ″	″	° ′ ″	″
5 ϑ Centauri	2	13 54 57,83	3,517	35 22 34,4A	+ 17,56
η Centauri	3	14 22 52,00	3,741	41 16 3,0A	+ 16,26
24 γ Bootis	3	14 24 0,90	2,422	39 11 24,3B	− 16,20
34 Bootis	4.5	14 34 37,84	2,629	27 23 10,5B	−15,64
6 Librae	5	14 38 35,05	3,498	27 6 58,3A	+ 15,42
30 ζ Bootis	3.4	14 31 35,86	2,847	14 35 42,8B	−15,80
9 α² Librae	3	14 39 49,93	3,285	15 12 3,4A	+ 15,35
12 Hydrae	5.6	14 36 6,10	3,458	25 14 15,6A	+ 15,56
41 ρ Bootis	5.6	14 53 20,48	2,619	25 48 28,4B	−14,56
χ Centauri	3	14 46 12,93	3,839	41 17 21,2A	+ 14,98
42 β Bootis	3.4	14 54 24,67	2,256	41 11 13,5B	−14,50
δ Lupi	4	15 8 17,55	3,878	39 54 35,3A	+ 13,64
6 μ Coronae bor.	5	15 27 54,81	2,189	39 40 59,6B	−12,54
3 β Coronae bor.	4	15 19 35,00	2,477	29 48 15,0B	−12,90
40 Librae	4.5	15 26 24,20	3,644	29 6 23,4A	+ 12,43
39 Librae	5.6	15 24 54,50	3,602	27 27 35,9A	+ 12,54
5 α Coronae bor.	2	15 26 13,24	2,538	27 23 49,4B	−12,45
7 ζ Coronae bor.	4	15 31 50,80	2,250	37 17 40,6B	−12,05
η Lupi	4	15 46 54,10	3,922	37 48 34,0A	+ 10,99
28 β Serpentis	4.5	15 36 57,60	2,751	16 3 30,9B	−11,71
46 ϑ Librae	5	15 42 27,09	3,379	16 7 47,0A	+ 11,31
11 κ Coron. bor.	5	15 43 41,85	2,250	36 17 13,8B	−11,22
ϑ Lupi	4	15 53 29,30	3,895	36 14 32,5A	+ 10,50
20,¹ Coron. bor.	5	16 14 49,67	2,246	34 16 45,3B	− 8,87
21,² Coron. bor.	5	16 14 56,75	2,249	34 10 40,9B	− 8,86
α Regulae	5	16 18 20,33	3,882	34 15 11,3A	+ 8,60
21 α Scorpii	1	16 17 9,65	3,639	25 58 25,6A	+ 8,69
27 β Herculis	2.3	16 21 37,37	2,574	21 56 8,3B	− 8,33
23 τ Scorpii	3.4	16 23 27,00	3,704	27 47 7,3A	+ 8,18
30 g Herculis	5	16 22 3,47	1,737	42 19 47,3B	− 8,30
ζ¹ Scorpii	5.6	16 39 54,93	4,190	42 0 40,1A	+ 6,86
ζ² Scorpii	5.6	16 40 32,18	4,191	42 0 2,2A	+ 6,81
40 ζ Herculis	3	16 33 44,69	2,287	31 58 25,5B	− 7,36
26 ε Scorpii	3	16 37 13,58	3,900	33 54 49,7A	+ 7,08

Catalogus

fixarum quarumdam ejusdem proxime ascensionis rectae et declinationis, sed denominationis oppositae, ad investigandam tubi culminatorii deviationem.

Nomen et Charact. stellar.	Ordo magn.	Ascensio recta media. 1800.	Variatio annua. +	Declinat. media 1800.	Variatio annua.
		H ′ ″	″	° ′ ″	″
44 ν Herculis	3	16 37 3,14	2,040	39 18 39,5 B	— 7,17
41 Scorpii	4	16 38 20,38	4,028	37 41 13,2 A	+ 6,98
42 Scorpii	3,4	16 38 48,62	4,028	37 39 33,9 A	+ 6,95
k Scorpii	3	16 31 4[illegible],82	3,914	35 49 30,1 A	+ 5,87
59 d Herculis	5	16 34 13,6[illegible]	2,205	35 52 2,7 B	— 5,67
35 ε Ophiuchi	2,3	16 38 34,71	3,415	15 27 47,9 A	+ 5,28
64 α Herculis	3,4	17 3 31,71	2,721	14 37 48,[illegible] B	— 4,72
56 a Ophiuchi	4,5	17 5 3,6[illegible]	3,701	26 17 33,4 A	+ 4,93
76 λ Herculis	4,5	17 22 30,[illegible]	2,412	26 16 17,2 B	— 3,25
65 δ Herculis	3,4	17 6 48,91	2,455	25 5 10,1 B	— 4,61
42 ϱ Ophiuchi	3	17 9 44,03	3,663	24 47 1,7 A	+ 4,36
70 Herculis	5,6	17 12 39,82	2,461	24 42 35,3 B	— 4,11
67 π Herculis	3	17 8 5,52	2,079	37 2 49,3 B	— 4,50
75 ζ Herculis	4	17 16 47,62	2,062	37 20 23,9 B	— 3,73
34 υ Scorpii	3,4	17 17 10,67	4,033	37 7 5,4 A	+ 3,72
35 λ Scorpii	3	17 20 1,86	4,049	36 56 24,5 A	+ 3,48
3 p Sagittarii	4,5	17 34 58,17	3,737	27 44 10,2 A	+ 2,20
[illegible] α Herculis	4,5	17 38 35,77	2,301	27 50 38,7 B	— 1,87
[illegible] Telescopii	4	17 36 14,64	4,039	36 57 38,6 A	+ 2,07
1 ϱ Herculis	4	17 49 23,60	2,047	37 17 8,9 B	— 0,[illegible]
2 ξ Herculis	4	17 49 59,64	2,315	29 16 46,3 B	— 0,87
Sagittarii	5	17 52 14,48	3,819	29 34 20,8 A	+ 0,67
4 ι Herculis	5	17 50 50,70	2,285	30 12 57,5 B	— 0,81
10 γ Sagittarii	4	17 52 58,17	3,845	30 24 32,3 A	+ 0,62
[illegible] Coronae austr.	5	18 19 35,21	4,135	38 51 4,5 A	— 1,71
3 α Lyrae	1	18 30 9,89	2,028	38 36 21,9 B	+ 3,00
κ Coronae austr.	5	18 55 30,72	4,082	38 11 52,6 A	— 4,83
4 ε Lyrae	5	18 37 42,56	1,977	39 28 10,8 B	+ 3,20
[illegible] Coronae austr.	5	18 56 13,11	4,135	39 38 24,0 A	— 4,8[illegible]
10 δ Lyrae	4	18 42 41,77	2,205	33 8 23,9 B	+ 3,71
38 ζ Sagittarii	4	18 46 52,39	3,819	30 8 59,7 A	— 4,5[illegible]
51 Sagittarii	4	19 8 14,22	4,[illegible]	44 48 57,5 A	— 5,8[illegible]
18 δ Cygni	4	19 38 42,88	1,865	44 39 2,3 B	+ 8,36

Catalogus

fixarum quarumdam ejusdem proxime aſcenſionis rectae et declinationis, ſed denominationis oppoſitae, ad inveſtigandam tubi culminatorii deviationem.

Nomen et Charact. ſtellar.	Ordo magn.	Aſcenſio recta media 1800.	Variatio annua. +	Declinat. media 1800.	Variatio annua.
		h ′ ″	″	° ′ ″	″
14 Cygni	5.6	19 32 55,37	1,942	42 21 47,5 B	+ 7,90
Sagittarii	4.5	19 41 26,16	4,164	42 22 38,7 A	— 8,57
59 b Sagittarii	5	19 44 39,02	3,691	27 41 5,8 A	— 8,84
15 Vulpeculae	4.5	19 52 51,70	2,457	27 12 37,0 B	+ 9,46
18 α Capricorni	5.6	20 39 51,39	3,599	27 39 17,7 A	—12,86
32 q Vulpeculae	4.5	20 46 1,86	2,545	27 18 21,6 B	+ 13,27
66 ν Cygni	4.5	21 9 41,40	2,455	34 3 53,5 B	+ 14,74
9 ι Piscis auſtr.	4.5	21 32 58,49	3,599	33 55 43,2 A	—16,03
27 Cygni	5.6	21 26 36,20	2,424	37 38 40,7 B	+ 15,71
γ Gruis	4	21 41 45,76	3,650	38 17 44,3 A	—16,49
μ^1 Gruis	5	22 3 29,94	3,653	42 20 0,3 A	—17,49
μ^2 Gruis	5	22 4 21,04	3,654	42 36 50,3 A	—17,53
6 Lacertae	5	22 21 53,93	2,561	42 6 9,2 B	+ 18,22
σ^2 Gruis	5.6	22 25 14,28	3,540	41 36 59,5 A	—18,35
1 o Andromedae	4	22 52 44,76	2,722	41 15 16,0 B	+ 19,17
18 ε Piscis auſtr.	4	22 29 33,40	3,355	28 4 50,5 A	—18,48
43 o Pegaſi	5	22 32 22,44	2,794	28 16 7,8 B	+ 18,58
ζ Gruis	5.6	22 31 50,50	3,518	42 27 0,8 A	—18,56
15 Lacertae	5.6	22 43 2,46	2,663	42 15 11,3 B	+ 18,91
44 η Pegaſi	3	22 53 38,16	2,787	29 10 47,6 B	+ 18,62
24 κ Piscis auſtr.	1	22 46 33,53	3,322	30 40 38,5 A	—19,01
53 β Pegaſi	2	22 54 4,97	2,868	27 0 7,5 B	+ 19,20
76 λ Aquarii	3.4	22 44 0,71	3,193	16 52 44,5 A	—18,94
54 α Pegaſi	1	22 54 47,93	2,958	14 7 56,4 B	+ 19,21
Aquarii	5.6	23 10 34,38	3,214	28 4 43,0 A	—19,56
78 Vulpeculae	5	23 33 56,80	2,980	28 15 18,6 B	+ 19,89
Appar. Sculpt.	5.6	23 22 11,97	3,241	38 55 12,0 A	—19,75
15 Andromedae	5.6	3 24 52,30	2,894	39 8 6,5 B	+ 19,79
Phoenicis	5	23 24 15,88	3,201	43 43 6,7 A	—19,78
19 κ Andromed.	4.5	23 30 35,40	2,901	43 13 39,5 B	+ 19,86
21 κ Andromed.	1	23 58 4,27	3,060	27 59 11,0 B	+ 20,02
κ^2 Appar. Sculpt.	5.6	0 1 23,27	3,058	28 54 49,7 A	—20,02

STELLARVM ZODIACALIVM

CATALOGVS NOVVS

AD INITIVM ANNI MDCCC

CONSTRVCTVS

ASCENSIONES RECTAS MEDIAS

EX OBSERVATIONIBVS

IN SPECVLA ASTRONOMICA ERNESTINA

IN MONTE SEEBERG FACTIS

EXHIBENS.

STELLARVM ZODIACALIVM

CATALOGVS NOVVS

IN

ASCENSIONE RECTA

AD INITIVM ANNI MDCCC

A R I E S.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascenſio recta media in temp. ad init. anni 1800.	Precc. annua +	Diſt. a po o boreo	Aſcenſio recta media in part. æquat. ad init. anni 1800.	Precc. annua +	Differ. cum Piazzi.
			H ′ ″	″	° ′	″ ′ ″	″	″
1	2	5.6	1 31 39,98	3,251	70 42	22 54 59,71	48,62	— 2,6
2	3	8	1 31 42::	3,112	75 36	22 55 50 ::	48,18	. . .
3	. . .	8	1 33 59,11	3,241	71 9	23 29 46,63	48,61	— 3,2
4	4	6.7	1 37 21,36	3,217	74 3	24 20 20,44	48,25	— 5,4
5	. . .	8	1 37 32,14	3,217	73 59	24 23 2,06	48,26	— 2,1
6	1	7	1 39 6,93	3,277	68 45	24 46 44,21	49,10	— 3,2
7	5 γ	4.5	1 42 34,80	3,251	71 41	25 38 41,98	48,77	— 0,3
8	6 β	3	1 43 56,92	3,270	70 10	25 54 13,75	49,05	— 3,5
9	7	6	1 44 45,58	3,304	67 24	26 10 53,65	49,50	— 5,5
10	8 ι	6	1 46 26,89	3,241	73 10	26 36 45,40	48,61	— 4,4
11	9 λ	5.6	1 46 48,95	3,309	67 23	26 42 14,24	49,64	+ 0,2
12	seq.	8	1 46 50,83	3,309	67 23	26 42 42,50	49,64	. . . .
13	. . .	5.6	1 48 31,27	3,282	69 55	27 7 49,05	49,23	— 3,2
14	. . .	7	1 52 18,13	3,171	79 57	28 4 32,01	47,56	— 2,0
15	10	6.7	1 52 20,07	3,352	65 2	28 5 0,99	50,28	+ 3,2
16	. . .	6	1 52 46,04	3,255	72 45	28 11 30,53	48,83	— 1,4
17	. . .	8	1 53 2,87	3,354	65 3	28 15 43,00	50,30	+ 0,7
18	12 κ	5.6	1 55 25,88	3,319	68 19	28 50 58,14	49,79	— 1,1
19	11	6.7	1 55 30,80	3,356	65 15	28 52 42,02	50,34	+ 0,3
20	13 α	2.3	1 55 55,58	3,346	67 29	28 58 43,67	50,19	. . . .
21	. . .	8	1 56 48,44	3,259	72 56	29 12 6,92	48,89	— 2,9
22	. . .	8	1 56 55,81	3,363	65 0	29 13 57,21	50,45	. . . .
23	. . .	8	1 57 56,24	3,365	65 1	29 29 3,54	50,47	. . . .
24	14	5.6	1 58 4,07	3,365	65 1	29 31 1,08	50,48	— 0,7
25	15	6	1 59 34,03	3,283	71 27	29 53 30,46	49,24	— 9,2

A R I E S.

Num. al. ZACH.	Num. Catalog. FLAMST.	Ordo mgn.	Aſcenſio recta media in temp. ad init. anni 1800.	Praec. annua +	Diſt. a polo boreo	Aſcenſio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum PIAZZI.
			♓ ° ′ ″	″	° ′	° ′ ″	″	″
26	16	7	1 59 51,29	3,369	65 1	29 57 49,42	50,51	— 3,2
27	. . .	8	2 0 11,17	3,308	69 34	30 2 47,51	49,62	— 4,0
28	. . .	7	2 1 20,55	3,347	66 47	30 20 8,23	50,21	— 2,1
29	17	5.6	2 1 37,91	3,308	69 44	30 24 28,60	49,62	— 5,6
30	18	8	2 1 49,31	3,289	71 7	30 27 19,70	49,35	— 3,2
31	19	7	2 2 10,05	3,233	75 40	30 32 30,78	48,50	— 5,9
32	. . .	7	2 2 47,48	3,286	71 30	30 41 52,25	49,30	— 4,5
33	20	6.7	2 4 20,86	3,381	65 9	31 5 12,89	50,72	— 5,0
34	21	7	2 4 23,59	3,387	65 53	31 5 53,90	50,81	— 2,8
35	Δ d	6	2 5 50,23	3,426	62 11	31 27 33,52	51,40	— 2,5
36	Δ	8	2 5 51,06	3,426	62 11	31 27 45,91	51,40	— 0,9
37	22 9^{τ}	6	2 7 1,64	3,290	71 2	31 45 24,57	49,35	— 6,6
38	10 A Δ	6.7	2 7 23,85	3,429	62 17	31 50 57,68	51,44	— 0,1
39	$23 9^{2}$	8	2 8 3,05	3,298	71 14	32 0 45,78	49,49	— 6,4
40	68 Ceti	5	2 9 15,13	3,011	93 53	32 18 46,94	45,16	— 5,3
41	. . .	8	2 12 31,81	3,187	80 5	33 7 57,18	47,81	. . . .
42	. . .	8	2 13 28,94	3,185	80 25	33 22 14,03	47,78	. . . .
43	24 ξ	6	2 14 6,92	3,185	80 18	33 31 43,82	47,78	— 4,8
44	. . .	8	2 14 59,31	3,184	80 24	33 44 49,64	47,77	— 3,6
45	. . .	7.8	2 15 27,74	3,187	80 15	33 51 56,07	47,81	— 5,1
46	. . .	7	2 16 2,99	3,187	80 20	34 0 44,81	47,80	— 4,3
47	25	7.8	2 16 46,14	3,181	80 42	34 11 32,14	47,72	+ 0,3
48	. . .	6	2 19 3,45	3,403	65 40	34 45 51,75	51,05	— 2,3
49	26	6	2 19 27,02	3,319	71 2	34 51 45,33	49,80	— 4,8
50	27	6	2 19 50,27	3,287	73 11	34 57 33,99	49,35	— 3,1
51	28	6	Eadem cum 26 *Flamſt.*	. . .	. .	. . .	. .	. .
52	29	6	2 21 58,29	3,254	75 51	35 29 34,33	48,81	— 4,3
53	. . .	7	2 22 26,96	3,311	72 1	35 36 44,33	49,66	+ 0,7
54	30 d	7.8	2 25 27,31	3,409	66 14	36 21 49,64	51,13	— 4,0
55	seq.	6	2 25 30,25	3,409	66 14	36 22 33,74	51,13	— 3,7
56	31	8	2 25 44,62	3,223	78 26	36 26 9,32	48,35	. . . .
57	2	5.6	2 27 29,41	3,367	68 55	36 52 21,12	50,51	— 8,7
58	. . .	7.8	2 28 17,99	3,198	80 14	37 4 29,91	47,97	— 5,2
59	33	6	2 29 1,76	3,455	63 48	37 15 26,46	51,83	— 6,5
60	. . .	8	2 29 13,08	3,357	69 43	37 18 16,14	50,36	. . . .
61	. . .	8	2 29 21,44	3,358	69 43	37 20 21,62	50,37	. . . .
62	34	6	2 31 7,10	3,343	70 51	37 46 46,54	50,14	—13,5
63	. . .	7	2 31 15,65	3,199	80 19	37 48 54,81	47,98	— 7,1
64	35	4	2 31 44,96	3,474	63 9	37 56 14,33	52,12	+ 0,8
65	Δ	7.8	2 32 46,94	3,509	61 24	38 11 44,06	52,64	— 5,1

ARIES.

Num. Catal. ZACH.	Num. Catalog. FLAMST.	Ordo magn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Dist. a polo boreo	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum PIAZZI.
			h ′ ″	″	° ′	° ′ ″	″	″
66	36	7	2 33 10,68	3,311	73 5	38 17 40,19	49,67	— 4,2
67	37 e	6.7	2 33 33,15	3,273	75 32	38 23 16,94	49,10	—12,4
68	38	5.6	2 34 4,76	3,230	78 24	38 31 11,45	48,45	— 5,5
69	87 μ Ceti	4	2 34 8,79	3,195	80 44	38 32 11,92	47,93	— 6,3
70	. . .	8	2 36 1,37	3,229	78 35	39 0 20,53	48,43	— 7,0
71	39	4	2 30 2,07	3,514	61 35	39 0 31,02	52,71	+ 0,6
72	40	6	2 37 20,65	3,325	72 33	39 20 9,78	49,88	— 2,3
73	42 π	5	2 38 9,34	3,313	73 22	39 32 20,04	49,69	—10,1
74	41	3	2 38 14,60	3,482	63 34	39 33 38,98	52,23	— 0,5
75	43 σ	6	2 40 28,31	3,278	75 44	40 7 4,59	49,17	— 2,1
76	. . .	8	2 42 4,54	. .	. .	40 31 8,16	. .	. . .
77	44 ϵ^1	6.7	2 43 43,74	3,324	73 5	40 55 56,03	49,88	— 0,6
78	45 ϵ^2	6	2 44 35,45	3,337	72 29	41 8 51,74	50,05	— 5,2
79	46 ϵ^3	6	2 45 10,09	3,332	72 47	41 17 31,28	49,98	— 4,9
80	47	6	2 46 39,69	3,380	70 8	41 39 55,35	50,70	— 8,9
81	48 ε	5	2 47 48,16	3,394	69 28	41 57 2,37	50,91	— 5,4
82	. . .	8	2 48 28,09	. .	. .	42 7 1,38	. .	. . .
83	50	7.8	2 49 18,28	3,336	72 43	42 19 34,12	50,05	— 4,9
84	49	6	2 50 9,09	3,492	64 20	42 32 16,34	52,39	— 3,7
85	51	7	2 50 36,30	3,498	64 11	42 39 4,42	52,47	— 7,1
86	. . .	8	2 51 6,30	. .	. .	42 46 34,48	. .	. . .
87	52	6.7	2 53 44,69	3,476	65 32	43 26 10,30	52,15	— 4,5
88	53	6	2 56 11,31	3,345	72 54	44 2 49,62	50,18	— 3,7
89	54	6.7	2 57 2,52	3,361	71 59	44 15 37,86	50,42	— 6,8
90	55	6.7	2 57 37,02	3,562	61 42	44 24 15,37	53,43	— 8,6
91	. . .	7	2 58 13,83	3,374	71 24	44 33 27,51	50,61	— 7,0
92	. . .	8	2 58 27,71	3,336	73 31	44 36 55,62	50,04	— 5,1
93	. . .	8	2 58 36,16	. .	. .	44 39 2,39	. .	. . .
94	. . .	8	2 59 29,71	. .	. .	44 52 25,59	. .	. . .
95	57 δ	4.5	3 0 13,01	3,383	71 2	45 3 15,19	50,75	— 6,9
96	56	6	3 0 21,09	3,526	63 30	45 5 16,35	52,89	— 1,4
97	58 ξ	5	3 3 25,87	3,413	69 42	45 51 28,02	51,20	— 3,9
98	. . .	8	3 5 19,28	. .	. .	46 19 49,24	. .	. . .
99	. . .	8	3 6 12,71	. .	. .	46 33 10,68	. .	. . .
100	59	6.7	3 8 1,04	3,542	63 40	47 0 15,58	53,13	— 2,3
101	. . .	8	3 8 35,98	. .	. .	47 8 59,74	. .	. . .
102	60	7.8	3 8 39,94	3,514	65 4	47 9 59,15	52,17	— 5,7
103	. . .	8	3 8 43,59	. .	. .	47 10 53,83	. .	. . .
104	. . .	7.8	3 9 22,92	3,411	70 13	47 20 43,81	51,71	— 4,5
105	61 ϵ^2	6	3 9 42,33	3,424	69 35	47 25 34,99	51,37	— 3,4

ARIES.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Aſcenſio recta media in temp. ad init. anni 1800.	Praec. annua +	Diſt. a polo boreo	Aſcenſio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h ′ ″	″	° ′	° ′ ″	″	″
106	62	6	3 10 13,24	3,557	63 7	47 33 18,56	53,36	— 1,4
107	63 r^2	7	3 11 15,99	3,419	69 59	47 48 59,92	51,29	— 5,6
108	. . .	8	3 11 48,63	3,424	69 45	47 57 9,41	51,37	— 3,4
109	64 g	5.6	3 12 31,69	3,501	66 0	48 7 55,38	52,52	— 2,3
110	65	6	3 12 55,68	3,421	69 55	48 13 55,17	51,33	— 4,8
111	66	6.7	3 16 46,50	3,469	67 54	49 11 37,46	52,04	+ 1,5

TAVRVS.

			h ′ ″	″	° ′	° ′ ″	″	″
112	. . .	5.6	3 8 15,88	3,586	61 41	47 3 58,13	53,78	— 5,7
113	1 o	4	3 14 4,09	3,205	81 41	48 31 1,40	48,08	— 7,4
114	. . .	8	3 14 8,82	3,225	80 37	48 32 12,25	48,37	. . .
115	2 ξ	4	3 16 20,75	3,220	80 58	49 5 11,30	48,30	— 5,3
116	. . .	7.8	3 17 41,61	3,251	79 19	49 25 24,21	48,77	— 6,2
117	4 s	6	3 19 29,71	3,251	79 21	49 52 25,72	48,77	— 6,1
118	. . .	8	3 19 44,53	3,413	70 55	49 56 8 :	51,19	. . .
119	5 f	5	3 19 51,08	3,281	77 45	49 57 46,18	49,21	— 7,8
120	. . .	8	3 19 57,20	3,491	67 4	49 59 18 :	52,37	. . .
121	. . .	8	3 20 15,44	3,493	67 3	50 3 51,62	52,40	— 8,1
122	6 t	6.7	3 21 47,73	3,217	81 19	50 20 55,96	48,25	— 6,8
123	7	6	3 22 37,27	3,515	66 15	50 39 19,08	52,72	— 4,4
124	. . .	7-8	3 22 45,80	3,378	72 50	50 41 26,94	50,67	— 4,4
125	. . .	8	3 22 58,70	3,415	71 0	50 44 41,54	51,23	. . .
126	8	7	3 23 52,70	3,401	71 47	50 58 10,54	51,01	. . .
127	9	7	3 25 13,98	3,490	67 32	51 18 29,70	52,35	. . .
128	. . .	8	3 26 35,31	3,535	75 14	51 38 49,62	50,03	. . .
129	10	5	3 26 40,67	3,055	90 14	51 40 10,11	45,82	— 5,6
130	11	6	3 28 51,19	3,543	65 20	52 12 47,82	53,15	— 5,9
131	12	6	3 29 26,84	3,104	87 36	52 21 42,63	46,55	— 2,7
132	15	8	3 30 31,63	3,491	67 52	52 37 54,45	52,37	— 5,0
133	13	6.7	3 30 48,16	3,426	70 57	52 42 2,44	51,39	— 4,5
134	14	7	3 32 14,48	3,427	70 59	53 3 37,25	51,41	— 5,8
135	16	5.6	3 32 56,31	3,527	66 21	53 14 4,65	52,91	— 3,2
136	17 b	4.5	3 33 1,30	3,523	66 31	53 15 19,55	52,85	+ 0,6
137	18 m	7	3 33 15,36	3,541	65 48	53 18 50,40	53,11	— 1,4
138	19 e	5	3 33 19,72	3,531	66 10	53 19 55,81	52,97	— 4,1
139	20 c	5	3 33 56,87	3,530	66 16	53 29 13,02	52,96	— 2,5
140	21 k	6.7	3 34 0,71	3,534	66 5	53 30 10,71	53,02	— 2,7
141	15 n	7	3 34 1,71	3,507	67 39	53 30 25,69	52,60	— 4,7

STELLARVM ZODIACALIVM

CATALOGVS NOVVS

IN

ASCENSIONE RECTA

AD INITIVM ANNI MDCCC

ARIES.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo magn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Dist. a polo boreo	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi
			h ′ ″	″	° ′	° ′ ″	″	″
1	2	5.6	1 31 39,98	3,251	70 42	22 54 59,71	48,62	— 2,6
2	3	8	1 31 42,11	3,112	73 36	22 55 50,11	48,18	. . .
3	. . .	8	1 33 50,11	3,241	71 9	23 29 46,63	48,61	— 3,2
4	4	6.7	1 37 21,36	3,217	74 3	24 20 20,14	48,25	— 5,4
5	. . .	8	1 37 52,14	3,217	73 59	24 23 2,06	48,26	— 2,1
6	1	7	1 39 6,93	3,277	98 45	24 46 44,21	49,10	— 3,3
7	5γ	4.5	1 42 51,86	3,251	71 41	25 38 41,98	48,77	— 0,5
8	6β	3	1 45 59,92	3,270	70 10	25 54 15,75	49,05	— 3,5
9	7	6	1 44 45,58	3,304	67 24	26 10 53,63	49,50	— 5,5
10	8ι	6	1 46 26,89	3,243	73 10	26 36 45,40	48,61	— 3,4
11	9λ	5.6	1 46 48,93	3,309	67 23	26 42 14,24	49,64	+ 0,2
12	seq.	8	1 46 50,85	3,309	67 23	26 42 42,50	49,64	. . .
13	. .	5.6	1 48 31,27	3,282	69 55	27 7 49,05	49,23	— 3,2
14	. .	7	1 52 18,13	3,171	79 57	28 4 52,01	47,56	— 2,0
15	10	6.7	1 52 20,07	3,352	65 2	28 5 0,99	50,28	+ 3,2
16	. .	9	1 52 49,04	3,255	72 43	28 11 30,53	48,85	— 1,4
17	. .	8	1 53 2,87	3,354	65 3	28 15 45,00	50,30	+ 0,7
18	12ϰ	5.6	1 55 25,28	3,319	68 19	28 50 58,14	49,79	— 1,1
19	11	6.7	1 55 30,89	3,350	65 15	28 52 42,02	50,34	+ 0,5
20	13α	2.3	1 55 55,58	3,346	67 20	28 58 43,67	50,19	. . .
21	. .	8	1 59 48,41	3,259	72 50	29 12 6,02	48,89	— 2,9
22	. .	8	1 59 55,81	3,363	65 0	29 13 57,21	50,45	. . .
23	. .	8	1 57 59,24	3,345	65 1	29 29 3,54	50,47	. . .
24	14	5.6	1 58 4,07	3,305	65 1	29 31 1,08	50,48	— 0,7
25	15	6	1 59 54,03	3,285	71 27	29 53 30,46	49,24	— 9,2

A R I E S.

Num. al. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Aſcenſio recta media in temp. ad init. anni 1800.	Praec. annua +	Diſt. a polo boreo	Aſcenſio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			♓ ° ′ ″	″	° ′	° ′ ″	″	″
26	16	7	1 59 51,29	3,369	65 1	29 57 49,42	50,51	— 3,2
27	. . .	8	2 0 11,17	3,308	69 34	30 2 47,51	49,62	— 4,0
28	. . .	7	2 1 20,55	3,347	66 47	30 20 8,23	50,21	— 2,1
29	17 ♓	5.6	2 1 37,91	3,308	69 44	30 24 28,60	49,62	— 3,6
30	18	8	2 1 49,31	3,289	71 7	30 27 19,70	49,35	— 3,2
31	19	7	2 2 10,05	3,233	75 40	30 32 30,78	48,50	— 5,9
32	. . .	7	2 2 47,48	3,286	71 30	30 41 52,25	49,30	— 4,5
33	20	6.7	2 4 20,86	3,381	65 9	31 5 12,89	50,72	— 5,0
34	21	7	2 4 23,59	3,387	65 53	31 5 53,90	50,81	— 2,8
35	Δ d	6	2 5 50,23	3,426	62 11	31 27 33,52	51,40	— 2,5
36	Δ	8	2 5 51,06	3,426	62 11	31 27 45,91	51,40	— 0,9
37	22 9 ♈	6	2 7 1,64	3,290	71 2	31 45 24,57	49,35	— 6,6
38	10 A Δ	6.7	2 7 23,85	3,429	62 17	31 50 57,68	51,44	— 0,1
39	23 9 ♉	8	2 8 3,05	3,298	71 14	32 0 45,78	49,49	— 6,4
40	68 Ceti	5	2 9 15,13	3,011	93 53	32 18 46,94	45,16	— 5,3
41	. . .	8	2 12 31,81	3,187	80 5	33 7 57,18	47,81	. . . .
42	. . .	8	2 13 28,94	3,185	80 25	33 22 14,03	47,78	. . . .
43	24 ξ	6	2 14 6,92	3,185	80 18	33 31 43,82	47,78	— 4,8
44	. . .	8	2 14 59,31	3,184	80 24	33 44 49,64	47,77	— 3,6
45	. . .	7.8	2 15 27,74	3,187	80 15	33 51 56,07	47,81	— 5,1
46	. . .	7	2 16 2,99	3,187	80 20	34 0 44,81	47,80	— 4,3
47	25	7.8	2 16 46,14	3,181	80 42	34 11 32,14	47,72	+ 0,3
48	. . .	6	2 19 3,45	3,403	65 40	34 45 51,75	51,05	— 2,3
49	26	6	2 19 27,02	3,319	71 2	34 51 45,33	49,80	— 4,8
50	27	6	2 19 50,27	3,287	73 11	34 57 33,99	49,35	— 3,1
51	28	6	Eadem cum 26 *Flamſt.*					
52	29 ♉	6	2 21 58,29	3,254	75 51	35 29 34,33	48,81	— 4,3
53	. . .	7	2 22 26,96	3,311	72 1	35 36 44,33	49,66	+ 0,7
54	30 d	7.8	2 25 27,31	3,409	66 14	36 21 49,64	51,13	— 4,0
55	seq.	6	2 25 30,25	3,409	66 14	36 22 33,74	51,13	— 3,7
56	31 ν	8	2 25 44,62	3,223	78 26	36 26 9,32	48,35	. . . .
57	2 ,	5.6	2 27 29,41	3,367	68 55	36 52 21,12	50,51	— 8,7
58	. . .	7.8	2 28 17,99	3,198	80 14	37 4 29,91	47,97	— 5,2
59	33	6	2 29 1,76	3,455	63 48	37 15 26,46	51,83	— 6,5
60	. . .	8	2 29 13,08	3,357	69 43	37 18 16,14	50,36	. . . .
61	. . .	8	2 29 21,44	3,358	69 43	37 20 21,62	50,37	. . . .
62	34 μ	6	2 31 7,10	3,343	70 51	37 46 46,54	50,14	—13,5
63	. . .	7	2 31 15,65	3,199	80 19	37 48 54,81	47,98	— 7,1
64	35	4	2 31 44,96	3,474	63 9	37 56 14,33	52,12	+ 0,8
65	Δ	7.8	2 32 46,94	3,509	61 24	38 11 44,06	52,64	— 5,1

ARIES.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo magn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Diff. a polo boreo	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Praec.
			h ′ ″	″	° ′	° ′ ″	″	″
55	56	7	2 33 10.68	3,311	73 6	38 17 40,19	49.67	— 4,2
67	57 e	6.7	2 33 33.13	3,273	75 32	38 23 16,94	49,10	—12,4
68	58	5.6	2 34 4,76	3,250	78 24	38 31 11,45	48.45	— 5.5
69	87 μCet.	4	2 34 8.79	3,195	80 44	38 32 11,92	47.93	— 6.5
70	. . .	8	2 36 1.17	3,229	78 35	39 0 20,55	48,45	— 7,0
71	59	4	2 36 2,07	3,314	61 35	39 0 31,02	52,71	+ 0,6
72	40	6	2 37 20,65	3,525	72 35	39 20 9,78	49.88	— 2,3
73	42 π	5	2 38 9.34	3,313	75 22	39 32 20,04	49.69	—10,1
74	41	3	2 38 14,60	3,482	63 34	39 33 38,98	52,23	— 0,5
75	43 σ	6	2 40 28,31	3,278	75 44	40 7 4,59	49,17	— 2,1
76	. . .	8	2 42 4,54	. .	. .	40 31 8,16	. .	. .
77	44 ζ^1	6.7	2 43 43,74	3,324	73 5	40 35 36,03	49,88	— 0,6
78	45 ζ^2	6	2 44 35,45	3,337	72 29	41 8 51,74	50,05	— 5,2
79	46 ζ^3	6	2 45 10,09	3,332	72 47	41 17 31,28	49,98	— 4,9
80	47	6	2 46 39,69	3,380	70 8	41 39 55,35	50,70	— 8,0
81	48 ε	5	2 47 48,16	3,394	69 28	41 57 2,37	50,91	— 5,4
82	. . .	8	2 48 28,09	. .	. .	42 7 1,38	. .	. .
83	50	7.8	2 49 18,28	3,336	72 48	42 19 31,12	50,05	— 4,9
84	49	6	2 50 9,09	3,492	64 20	42 32 16,54	52,39	— 3,7
85	51	7	2 50 36,30	3,408	64 11	42 39 4,42	52,47	— 7,1
86	. . .	8	2 51 6,30	. .	. .	42 46 34,48	. .	. .
87	52	6.7	2 53 44,69	3,476	65 32	43 26 10,30	52,15	— 4,5
88	53	6	2 56 11,31	3,345	72 54	44 2 49,62	50,18	— 3,7
89	54	6.7	2 57 2,52	3,361	71 59	44 15 37,86	50,42	— 6,8
90	55	6.7	2 57 37,02	3,562	61 42	44 24 15,37	53.45	— 8,6
91	. . .	7	2 58 15,83	3,374	71 24	44 33 27,51	50,61	— 7,0
92	. . .	8	2 58 27,71	3,336	73 31	44 36 55,62	50,04	— 5,1
93	. . .	8	2 58 36,16	. .	. .	44 39 2,39	. .	. .
94	. . .	8	2 59 29,71	. .	. .	44 52 25,59	. .	. .
95	57 δ	4.5	3 0 13,01	3,383	71 2	45 3 15,19	50,75	— 6,9
96	56	6	3 0 21,09	3,526	63 30	45 5 16,35	52,89	— 1,4
97	58 ξ	5	3 3 25,87	3,413	69 42	45 51 28,02	51,20	— 3,9
98	. . .	8	3 5 19,28	. .	. .	46 19 49,24	. .	. .
99	. . .	8	3 6 12,71	. .	. .	46 33 10,68	. .	. .
100	59	6.7	3 8 1.04	3,542	65 40	47 0 15,58	53,13	— 2,3
101	. . .	8	3 8 35,98	. .	. .	47 8 59,74	. .	. .
102	60	7.8	3 8 39,94	3,514	65 4	47 9 59,15	52,17	— 5,7
103	. . .	8	3 8 45,59	. .	. .	47 10 53,85	. .	. .
104	. . .	7.8	3 9 22,92	3,411	70 13	47 20 43,81	51,71	— 4,5
105	61 τ^2	6	3 9 42,53	3,424	69 35	47 25 34,99	51,37	— 3,4

ARIES.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Aſcenſio recta media in temp. ad init. anni 1800.	Praec. annua +	Diſt. a polo boreo	Aſcenſio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h ′ ″	″	° ′	° ′ ″	″	″
106	62	6	3 10 13,24	3,557	63 7	47 33 18,56	53,36	— 1,4
107	63 r²	7	3 11 15,99	3,419	69 59	47 48 59,92	51,29	— 5,6
108	. . .	8	3 11 48,63	3,424	69 45	47 57 9,41	51,37	— 3,4
109	64 g	5.6	3 12 31,69	3,501	66 0	48 7 55,38	52,52	— 2,3
110	65	6	3 12 55,68	3,421	69 55	48 13 55,17	51,33	— 4,8
111	66	6.7	3 16 46,50	3,469	67 54	49 11 37,46	52,04	+ 1,5

TAVRVS.

			h ′ ″	″	° ′	° ′ ″	″	″
112	. . .	5.6	3 8 15,88	3,586	61 41	47 3 58,13	53,78	— 5,7
113	1 o	4	3 14 4,09	3,205	81 41	48 31 1,40	48,08	— 7,4
114	. . .	8	3 14 8,82	3,225	80 37	48 32 12,25	48,37	. . .
115	2 ξ	4	3 16 20,75	3,229	80 58	49 5 11,30	48,30	— 5,3
116	. . .	7.8	3 17 41,61	3,251	79 19	49 25 24,21	48,77	— 6,2
117	4 s	6	3 19 29,71	3,251	79 21	49 52 25,72	48,71	— 6,1
118	. . .	8	3 19 44,53	3,413	70 55	49 56 8 :	51,19	. . .
119	5 f	5	3 19 51,08	3,281	77 45	49 57 46,18	49,21	— 7,8
120	. . .	8	3 19 57,20	3,491	67 4	49 59 18 :	52,37	. . .
121	. . .	8	3 20 15,44	3,493	67 3	50 3 51,62	52,40	— 8,1
122	6 t	6.7	3 21 47,73	3,217	81 19	50 20 55,96	48,25	— 6,8
123	7	6	3 22 37,27	3,515	66 15	50 39 19,08	52,72	— 4,4
124	. . .	7.8	3 22 45,80	3,378	72 50	50 41 26,94	50,67	— 4,4
125	. . .	8	3 22 58,70	3,415	71 0	50 44 41,54	51,23	. . .
126	8	7	3 23 52,70	3,401	71 47	50 58 10,54	51,01	. . .
127	9	7	3 25 13,98	3,490	67 32	51 18 29,70	52,35	. . .
128	. . .	8	3 26 35,31	3,335	75 14	51 38 49,62	50,03	. . .
129	10	5	3 26 40,67	3,055	90 14	51 40 10,11	45,82	— 5,6
130	11	6	3 28 51,19	3,543	65 20	52 12 47,82	53,15	— 5,9
131	12	6	3 29 26,84	3,104	87 36	52 21 42,63	46,55	— 2,7
132	15	8	3 30 31,63	3,491	67 52	52 37 54,45	52,37	— 5,0
133	13	6.7	3 30 48,16	3,426	70 57	52 42 2,44	51,39	— 4,5
134	14	7	3 32 14,48	3,427	70 59	53 3 37,25	51,41	— 5,8
135	16	5.6	3 32 56,31	3,527	66 21	53 14 4,65	52,91	— 3,2
136	17 b	4.5	3 33 1,30	3,523	66 31	53 15 19,55	52,85	+ 0,6
137	18 m	7	3 33 15,36	3,541	65 48	53 18 50,40	53,11	— 1,4
138	19 e	5	3 33 19,72	3,531	66 10	53 19 55,81	52,97	— 4,1
139	20 c	5	3 33 56,87	3,530	66 16	53 29 13,02	52,96	— 2,5
140	21 k	6.7	3 34 0,71	3,534	66 5	53 30 10,71	53,02	— 2,7
141	15 n	7	3 34 1,71	3,507	67 39	53 30 25,69	52,60	— 4,7

TAVRVS.

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			♓ ° ′ ″	″	° ′	° ′ ″	″	″
142	. . .	8	3 54 2,18	3,535	66 5	53 30 32,64	53,02	. . .
143	22 l	7.8	3 54 8,87	3,535	66 6	53 32 13,06	53,02	+ 5,2
144	23 d	5	3 54 28,68	3,523	66 41	53 37 10,26	52,84	+ 0,2
145	29 u²	6	3 35 3,79	3,161	84 35	53 45 56,82	47,42	— 9,6
146	24 p	7	3 35 28,67	3,528	66 31	53 52 10,02	52,92	— 3,4
147	. . .	7	3 35 36,99	3,532	66 20	53 54 14,81	52,98	— 4,3
148	25 n	3	3 35 37,29	3,528	66 31	53 54 19,31	52,92	— 3,7
149	. . .	7.8	3 36 36,90	3,535	66 17	54 9 13,52	53,02	— 5,9
150	26 s	7.8	3 37 5,39	3,525	66 46	54 16 20,89	52,87	— 2,9
151	27 f	4.5	3 37 17,67	3,529	66 34	54 19 25,07	52,94	— 5,6
152	30 e	6	3 37 18,78	3,262	79 29	54 19 41,71	48,93	— 5,0
153	28 h	5.6	3 37 18,82	3,531	66 29	54 19 42,28	52,97	+ 1,3
154	. . .	6	3 37 38,91	3,231	80 59	54 24 43,61	48,47	— 3,0
155	. . .	7.8	3 38 6,73	3,526	66 46	54 31 41,02	52,89	— 4,5
156	. . .	7	3 38 10,96	3,491	68 23	54 32 44,34	52,36	— 1,6
157	. . .	6.7	3 38 18,89	3,565	65 2	54 34 43,32	53,48	— 1,0
158	. . .	7.8	3 39 0,29	3,530	66 39	54 45 4,41	52,94	— 2,9
159	31 u²	6	3 41 21,31	3,173	84 4	55 20 19,62	47,60	— 9,6
160	. . .	7	3 41 44,66	3,389	73 17	55 26 9,91	50,84	— 4,8
161	32	6	3 45 4,40	3,505	68 7	56 16 6,04	52,58	— 5,7
162	33	6.7	3 45 13,68	3,522	67 25	56 18 25,14	52,83	— 9,4
163	. . .	7	3 46 24,05	3,165	84 33	56 36 0,82	47,48	— 7,1
164	. . } d	8	3 48 58,90	3,466	70 5	57 14 45,54	51,99	. . .
165	. . }	8	3 49 2,39	3,460	70 5	57 15 35,81	51,99	. . .
166	. . .	7.8	3 49 12,58	3,397	73 17	57 18 5,64	50,95	— 3,2
167	. . .	6.7	3 49 18,78	3,415	72 23	57 19 41,65	51,25	— 7,9
168	. . .	8	3 49 29,19	3,463	70 15	57 22 17,89	51,94	. . .
169	34	. .	Eli Uranus	. . . .		. . . .	. . .	. . .
170	35 λ	4	3 49 36,91	3,296	78 5	57 24 13,60	49,41	— 6,9
171	. . .	7	3 50 52,18	3,247	80 34	57 43 2,72	48,70	— 6,3
172	36	6.7	3 52 25,42	3,553	66 27	58 6 21,54	53,30	— 4,8
173	38 r	5	3 52 31,65	3,167	84 35	58 7 54,76	47,51	— 2,3
174	37 A	5	3 52 53,56	3,507	68 29	58 13 23,40	52,60	— 5,1
175	. . .	6.7	3 53 7,49	3,211	82 22	58 16 52,34	48,17	— 5,3
176	40	6.7	3 53 9,48	3,156	85 8	58 17 22,18	47,34	—14,0
177	39	6.7	3 53 31,05	3,506	68 32	58 22 45,81	52,59	— 2,3
178	41	6	3 54 21,67	3,641	62 57	58 35 25,10	54,62	— 0,8
179	. . .	8	3 54 30,64	3,639	63 2	58 37 39,64	54,59	—14,1
180	42 ψ	5.6	3 54 40,33	3,677	61 33	58 40 4,96	55,16	— 5,3
181	. . .	6	3 56 33,11	3,405	73 12	59 8 16,71	51,08	— 4,0

TAVRVS.

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			h ′ ″	″	° ′	° ′ ″	″	″
182	. . .	8	3 57 23,18	3,405	75 15	59 20 47,72	51,07	— 3,3
183	43 a^1	6	3 57 32,00	3,456	70 56	59 23 0,06	51,84	— 2,5
184	. . .	6.7	3 57 52,21	3,321	77 9	59 28 3,14	49,82	— 4,6
185	. . .	6.7	3 58 10,86	3,808	56 57	59 32 42,92	57,12	— 7,1
186	44 P	6.7	3 58 40,67	3,618	64 3	59 40 10,01	54,28	— 5,0
187	. . .	7.8	3 59 39,82	3,392	75 57	59 54 58,33	50,88	— 6,2
188	45	6.7	4 0 42,18	3,161	85 0	60 10 32,64	47,41	— 5,0
189	. . .	6.7	4 1 0,96	3,524	68 7	60 15 14,42	52,87	— 6,9
190	. . .	7.8	4 2 38,22	3,257	80 18	60 39 33,34	48,86	— 4,3
191	46	6	4 2 47,94	3,205	82 48	60 41 50,04	49,08	— 6,8
192	. . .	8	4 3 1,34	3,274	79 30	60 45 21,08	49,12	— 8,1
193	47	5.6	4 3 4,58	3,238	81 15	60 46 8,76	48,57	— 6,4
194	. . .	7	4 3 40,98	3,254	80 30	60 55 14,65	48,81	— 5,3
195	48	6	4 4 25,99	3,369	75 7	61 6 29,78	50,54	— 6,6
196	49 μ	5	4 4 41,25	3,231	81 37	61 10 18,76	48,47	— 5,3
197	. . .	8	4 4 47,94	3,176	84 18	61 11 59,03	47,64	— 5,0
198	. . .	7.8	4 4 50,87	3,175	84 19	61 12 43,11	47,63	— 4,1
199	50 a^2	5.6	4 5 35,77	3,487	69 55	61 23 26,62	52,31	— 5,6
200	. . .	8	4 6 30,01	. .	. .	61 37 30,21	. .	. . .
201	51	6.7	4 6 34,25	3,513	68 55	61 38 33,79	52,69	— 3,8
202	. . .	8	4 7 14,37	. .	. .	61 48 55,51	. .	. . .
203	53	6.7	4 7 39,80	3,503	69 21	61 54 57,02	52,55	— 5,4
204	56	6.7	4 7 47,50	3,519	68 43	61 56 52,51	52,78	— 3,8
205	52 ϕ	6	4 8 4,91	3,656	63 8	62 1 13,71	54,85	— 4,7
206	54 γ	3.4	4 8 25,45	3,378	74 52	62 6 21,72	50,67	— 3,7
207	55	7.8	4 8 28,88	3,398	73 58	62 7 13,24	50,97	— 3,3
208	57	6	4 8 42,95	3,343	76 27	62 10 44,23	50,15	— 4,0
209	58 h	6	4 9 16,60	3,367	75 24	62 19 8,94	50,50	— 6,3
210	. . .	7.8	4 9 48,64	3,507	69 18	62 27 9,53	52,60	— 5,0
211	. . .	7	4 10 2,07	3,177	84 21	62 30 31,04	47,66	— 4,3
212	59 χ	6	4 10 25,98	3,615	64 51	62 36 29,73	54,23	— 5,4
213	. . .	7	4 10 37,86	3,499	69 40	62 39 27,92	52,48	— 3,6
214	60	7	4 10 48,27	3,345	76 24	62 42 4,14	50,18	— 7,6
215	. . .	7	4 11 14,13	3,047	90 35	62 48 32,02	45,71	— 6,0
216	61 δ^2	4	4 11 25,00	3,423	72 56	62 51 14,95	51,35	— 6,0
217	. . .	8	4 11 26,64	3,583	66 11	62 51 39,55	53,75	. . .
218	. . .	7.8	4 11 46,34	3,506	69 30	62 56 35,11	52,59	— 5,1
219	62	7	4 11 55,48	3,585	66 11	62 58 52,19	53,77	+ 29,7
220	63	6	4 11 57,35	3,408	73 42	62 59 20,18	51,11	— 1,5
221	64 δ^2	4.5	4 12 34,78	3,423	73 2	63 8 41,72	51,34	— 3,7

TAVRVS.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Diff. a polo boreo.	Ascensio recta media in part. aequat. ad init. anni 1900.	Praec. annua +	Differ. cum Piazzi.
			h ′ ″	″	° ′	° ′ ″	″	″
222	66 r	5.6	4 12 58,10	3,248	81 1	63 14 31,51	48,72	— 5,1
223	. . .	6.7	4 13 24,00	3,775	59 2	63 20 59,95	56,62	— 4,0
224	65 κ^1	5	4 13 28,27	3,538	68 11	63 22 4,04	53,06	— 4,0
225	67 κ^2	6.7	4 13 31,62	3,535	68 16	63 22 54,33	53,03	— 2,7
226	68 δ^3	5	4 13 55,76	3,435	72 32	63 28 56,45	51,52	— 5,4
227	70	7	4 14 12,97	3,389	74 32	63 33 14,51	50,84	— 0,1
228	69 ν^1	5	4 14 21,49	3,551	67 39	63 35 22,41	53,26	— 5,0
229	71	5	4 14 58,01	3,383	74 51	63 44 30,16	50,75	— 4,7
230	73 π	5	4 15 19,22	3,363	75 45	63 49 48,31	50,45	— 3,5
231	72 ν^2	6	4 15 21,09	3,553	67 28	63 50 16,34	53,30	— 2,2
232	. . .	7.8	4 16 9,48	3,524	68 50	64 2 22,22	52,86	— 3,9
233	74 ^{e}	4	4 16 57,32	3,467	71 17	64 14 19,83	52,00	— 3,6
234	75	6	4 17 1,21	3,404	74 6	64 15 18,10	51,03	— 0,1
235	76	7	4 17 4,08	3,365	75 43	64 16 1,22	50,48	— 3,9
236	77 ϑ^2	5	4 17 9,76	3,392	74 30	64 17 26,36	50,89	— 3,4
237	78 υ^2	5	4 17 15,56	3,391	74 35	64 18 53,47	50,86	— 7,0
238	79 b	6	4 17 38,77	3,327	77 24	64 24 41,52	49,91	— 5,5
239	. . .	8	4 18 35,02	3,484	70 36	64 38 45,31	52,26	— 6,0
240	80	6	4 18 45,17	3,387	74 49	64 41 17,51	50,80	— 1,6
241	82	7.8	4 19 7,36	3,373	75 15	64 46 30,34	50,66	— 6,5
242	. . .	5	4 19 8,00	3,400	74 15	64 47 0,10	51,00	— 7,0
243	81	5.6	4 19 15,09	3,388	74 45	64 48 46,44	50,82	— 1,1
244	. . .	8	4 19 20,98	3,399	74 18	64 50 14,72	50,98	— 7,2
245	83	6	4 19 22,66	3,343	76 43	64 50 39,96	50,13	— 9,6
246	84	7.8	4 19 47,12	3,375	75 20	64 56 46,74	50,60	— 7,4
247	85	6	4 20 27,21	3,393	74 35	65 6 48,15	50,89	— 4,0
248	. . .	7	4 21 26,44	3,165	85 2	65 21 37,04	47,47	— 6,3
249	. . .	7	4 22 8,44	3,720	61 28	65 32 6,65	55,80	— 8,5
250	. . .	7.8	4 22 12,37	3,405	74 7	65 33 5,63	51,07	— 4,1
251	86 ϵ	5	4 22 30,67	3,372	75 35	65 37 40,03	50,58	— 4,0
252	. . .	7.8	4 22 33,69	3,355	77 11	65 38 25,41	50,03	— 5,4
253	. . .	7.8	4 23 59,94	3,491	70 35	65 59 59,12	52,36	— 6,0
254	87 κ	1	4 24 27,45	3,425	73 54	66 6 51,75	51,38	— 3,4
255	88 d	5	4 24 40,41	3,269	80 16	66 10 6,13	49,03	— 3,1
256	89	7	4 26 43,32	3,403	74 23	66 40 49,82	51,04	— 2,8
257	90 c^1	5	4 26 59,51	3,322	77 54	66 44 52,67	49,83	— 6,2
258	91 σ^1	5.6	4 27 44,66	3,397	74 36	66 50 9,86	50,96	+ 0,6
259	92 σ^2	5.6	4 27 50,76	3,400	74 29	66 57 41,36	51,00	+ 5,6
260	. . .	6.7	4 28 16,64	3,221	82 32	67 4 9,62	48,31	— 1,6
261	. . .	6.7	4 28 49,97	3,719	61 47	67 12 29,51	55,79	— 5,8

TAVRVS.

Num. Catal. ZACH.	Num. Catalog. FLAMST.	Ordo mgn.	Aſcenſio recta media in temp. ad init. anni 1800.	Praec. annua +	Diſt. a polo boreo.	Aſcenſio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum PIAZZI.
			H ′ ″	″	° ′	° ′ ″	″	″
262	93 c²	6	4 28 56,09	3,316	78 12	67 14 1,39	49,74	— 7,1
263	94τ } d	8	4 30 13,14	3,571	67 27	67 33 17,45	53,54	— 2,5
264	seq. }	5	4 30 15,56	3,571	67 26	67 33 53,38	53,55	— 5,7
265	95	7	4 31 8,32	3,602	66 18	67 47 4,76	53,98	—12,3
266	. . .	8	4 32 16,28	3,564	67 47	68 4 4,14	53,46	. . .
267	. . .	8	4 33 19,61	3,727	61 43	68 19 54,12	55,90	— 6,1
268	. . .	6	4 33 21,41	3,295	79 14	68 20 21,11	49,43	— 4,6
269	. . .	6.7	4 34 36,76	3,475	71 38	68 39 11,45	52,12	— 3,3
270	. . .	8	4 37 0,56	3,474	71 38	69 15 8,44	52,11	— 7,5
271	. . .	8	4 38 5,24	3,406	74 28	69 31 18,62	51,09	— 6,6
272	96	6.7	4 38 18,41	3,407	74 27	69 34 36,16	51,11	— 9,2
273	97i	5.6	4 39 41,13	3,479	71 31	69 55 16,94	52,18	— 3,9
274	4 o² Or.	5.6	4 41 13,91	3,370	76 6	70 18 28,60	50,55	— 7,6
275	. . .	8	4 42 30,41	3,437	73 19	70 37 36,21	51,56	— 5,2
276	. . .	8	4 43 26,50	3,423	73 57	70 51 37,51	51,34	— 5,9
277	. . .	8	4 43 40,07	3,381	75 43	70 55 1,13	50,71	. . .
278	. . .	8	4 43 49,94	3,429	73 43	70 57 29,05	51,43	— 8,1
279	. . .	8	4 44 59,85	3,611	66 23	71 14 57,7	54,17	. . .
280	. . .	7	4 45 41,50	3,612	66 23	71 25 22,56	54,19	— 4,6
281	. . .	6.7	4 45 50,05	3,443	73 10	71 27 30,73	51,64	— 2,0
282	98 x	6	4 45 56,03	3,642	65 16	71 29 0,38	54,63	— 9,0
283	. . .	7	4 47 39,42	3,382	75 46	71 54 51,32	50,73	— 5,3
284	101	6	4 48 16,33	3,414	74 24	72 4 4,96	51,21	— 7,6
285	. . .	8	4 50 11,32	3,547	69 1	72 32 49,79	53,21	. . .
286	102 :	4.5	4 51 9,23	3,556	68 42	72 47 18,39	53,34	— 2,7
287	. . } d	8	4 52 26,11	3,558	68 39	73 6 31,63	53,37	. . .
288	. . }	7	4 52 27,23	3,549	69 1	73 6 48,41	53,23	— 3,4
289	11y² Or	5	4 53 9,00	3,405	74 53	73 17 15,02	51,07	— 3,8
290	. . .	8	4 53 45,12	3,513	70 29	73 26 16,84	52,70	— 2,6
291	Orion.	8	4 53 52,40	3,405	74 54	73 28 6,2	51,07	. . .
292	. . .	8	4 55 35,12	3,691	63 47	73 53 46,84	55,36	. . .
293	104m	5	4 55 38,30	3,485	71 38	73 54 34,47	52,28	— 7,5
294	103	6	4 55 56,38	3,630	66 1	73 59 5,67	54,45	— 5,7
295	105	6	4 55 58,66	3,563	68 34	73 59 39,84	53,45	— 3,4
296	106 l²	5.6	4 55 58,97	3,551	69 51	73 59 44,59	52,96	— 7,4
297	107 l²	7	4 57 2,98	3,517	70 25	74 15 44,72	52,75	— 4,8
298	. . .	7.8	4 58 55,35	3,363	76 43	74 43 50,23	50,45	— 5,2
299	. . .	8	4 59 59,41	3,673	63 48	74 59 51,21	55,40	. . .
300	Orion.	6.7	5 0 12,83	3,424	74 13	75 3 12,47	51,36	— 5,0
301	108	7	5 3 27,06	3,584	67 57	75 51 45,94	53,75	— 7,0

TAVRVS.

Num. Catal. ZACH.	Num. Catalog. FLAMST.	Ordo magn.	Ascenſio recta media in temp. ad init. anni 1800.	Fraec. annua +	Diſt. a polo boreo	Ascenſio recta media in part. aequat. ad init. anni 1800.	Fraec. annua +	Differ. cum PIAZZI.
			h ′ ″	s	° ′	° ′ ″	s	s
302	. . .	8	5 4 8,45	.	. .	76 2 6,74	. .	. .
303	. . .	8	5 4 59,68	.	. .	76 14 55,14	. .	. .
304	. . .	8	5 5 41,61	3,529	70 6	76 25 24,14	52,95	. .
305	109 n	5.6	5 7 16,45	3,581	68 7	76 49 6,45	53,71	— 9,8
306	. . .	7	5 7 25,26	3,551	70 5	76 51 18,95	52,96	— 1,8
307	. . .	7	5 8 30,40	3,517	70 38	77 7 35,96	52,76	+ 5,6
308	. . .	7.8	5 9 4,25	3,525	70 24	77 17 3,81	52,84	— 3,8
309	. . .	8	5 10 25,49	3,525	70 19	77 36 22,39	52,88	. .
310	. . .	8	5 10 54,68	3,536	78 1	77 45 40,19	50,04	. .
311	110	6.7	5 12 5,32	3,446	3 30	78 1 19,74	51,69	— 8,5
312	. . .	8	5 12 37,34	. .	. .	78 9 20,04	. .	. . .
313	. . } d	8	5 12 41,65	3,463	72 49	78 10 24,82	51,95	. .
314	111 }	6	5 12 45,78	3,463	72 49	78 11 26,77	51,95	—12,2
315	112 β	2	5 13 39,49	3,781	61 35	78 24 52,35	56,85	— 2,6
316	113	7	5 14 32,74	3,447	73 29	78 38 11,97	51,71	. .
317	115	5.6	5 15 30,36	3,479	72 15	78 52 35,45	52,19	— 0,1
318	114 o	5	5 15 37,89	3,578	68 15	78 54 28,33	53,67	— 9,9
319	. . .	8	5 15 49,57:	. .	. .	78 57 23,5:	. .	. . .
320	116	5.6	5 16 16,51	3,427	74 18	79 4 7,59	51,41	— 5,2
321	117	6	5 16 25,42	3,461	72 56	79 6 21,24	51,91	— 0,2
322	118,	6.7	5 16 58,37	3,670	65 2	79 14 35,51	55,05	— 3,0
323	. . .	8	5 17 37,86	3,489	71 55	79 24 27,96	52,33	. . .
324	. . .	8	5 18 7,72	3,491	71 48	79 31 55,76	52,36	. . .
325	seq.	8	5 18 10,45	3,491	71 48	79 32 36,79	52,36	. . .
326	. . .	7	5 18 39,55	3,598	67 42	79 39 53,31	53,97	— 5,3
327	. . .	8	5 19 59,07	3,724	65 11	79 59 46,04	55,86	— 4,0
328	119	5.6	5 20 29,82	3,497	71 34	80 7 27,29	52,46	— 8,5
329	. . .	6.7	5 21 46,14	3,547	69 41	80 26 32,13	53,20	— 6,6
330	120	6	5 21 48,85	3,497	71 37	80 27 12,52	52,45	— 7,1
331	. . .	8	5 22 29,48	3,725	65 10	80 37 22,24	55,88	— 5,2
332	. . .	8	5 22 50,06	3,649	65 51	80 42 30,89	54,74	. . .
333	121	6	5 23 14,76	3,643	66 6	80 48 41,42	54,65	— 2,4
334	. . .	8	5 24 29,07:	. .	. .	81 7 16,4:	. .	. . .
335	seq.	8	5 25 9,21:	. .	. .	81 17 18,2:	. .	. . .
336	. . .	7	5 24 39,92	3,725	63 13	81 9 58,82	55,87	— 4,4
337	122	6	5 25 27,77	3,461	73 6	81 21 56,55	51,91	— 5,6
338	125 ζ	3.4	5 25 42,06	3,566	69 0	81 25 30,88	53,49	—10,7
339	. . } d	8	5 27 0,00	3,625	66 48	81 44 59,96	54,38	. . .
340	124 }	8	5 27 6,18	3,625	66 48	81 46 32,67	54,39	— 7,3
341	125	6	5 27 29,98	3,697	64 14	81 50 14,72	55,45	—11,5

TAVRVS.

Num. Catal. ZACH.	Num. Catalog. FLAMST.	Ordo mgn.	Aſcenſio recta media in temp. ad init. anni 1800.	Praec. anuua +	Diſt. a polo boreo.	Aſcenſio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum PRAESS.
			h ′ ″	″	° ′	° ′ ″	″	″
342	. . .	8	5 24 25,15	3,583	68 21	81 6 17,3	53,74	. . .
343	. . .	8	5 27 26,70	3,583	68 21	81 51 40,54	53,75	. . .
344	. . .	8	5 28 44,70	3,445	73 43	82 11 10,54	51,68	. . .
345	126	6	5 29 44,68	3,449	73 35	82 26 10,14	51,74	—10,9
346	. . .	8	5 30 43,06	3,512	71 8	82 40 45,84	52,68	. . .
347	127	8	5 31 8,07	3,512	71 8	82 47 1,38	52,68	— 7,5
348	ſeq.	8	5 31 31,60	3,512	71 8	82 52 54,0	52,68	. . .
349	Orion.	8	5 32 31,64	3,508	71 16	83 7 54,54	52,63	— 3,0
350	128	6	5 33 22,15	3,439	74 1	85 20 32,18	51,58	— 9,0
351	. .	7.8	5 33 27,69	3,506	71 24	83 21 46,3	52,58	— 2,3
352	. . .	8	5 35 4,05	3,547	69 49	83 46 0,70	53,20	— 5,2
353	129	7	5 35 15,72	3,433	74 16	83 48 55,83	51,49	— 7,1
354	. . .	7.8	5 35 39,54	3,667	65 24	83 54 53,16	55,00	— 3,7
355	ſeq.	8	5 35 41,49	3,667	65 24	83 55 22,29	55,00	. . .
356	130	6	5 35 46,82	3,481	72 21	83 56 42,24	52,22	— 6,2
357	131	6	5 35 49,88	3,400	75 36	83 57 28,25	51,00	— 1,6
358	133	6	5 36 22,51	3,381	76 11	84 5 37,70	50,71	— 6,5
359	. . .	7.8	5 36 26,46	3,561	69 13	84 6 36,51	53,42	— 5,0
360	132	5	5 36 44,90	3,663	65 31	84 11 13,51	54,94	— 9,0
361	134	5.6	5 38 19,08	3,356	77 25	84 34 46,22	50,34	— 9,8
362	. . .	6.7	5 38 22,37	3,761	62 6	84 35 35,50	56,42	— 7,9
363	135	6	5 39 6,42	3,395	75 46	84 46 36,36	50,93	—49,7
364	. . .	8	5 39 25,63	3,399	75 38	84 51 24,39	50,99	. . .
365	. . .	8	5 39 29,99	3,390	76 1	84 52 29,89	50,85	. . .
366	. . .	8	5 39 37,26	3,390	76 1	84 54 18,9	50,85	. . .
367	136	4.5	5 40 45,91	3,753	62 27	85 11 28,68	56,29	— 6,7
368	137	5.6	5 41 0,65	3,393	75 53	85 15 9,75	50,90	— 3,8
369	. . .	7	5 41 26,03	3,550	69 46	85 21 29,61	53,25	— 4,1
370	. . .	8	5 44 41,51	3,657	65 48	85 10 22,58	54,86	. . .
371	Orion.	8	5 45 20,32	3,522	70 50	86 20 4,80	52,85	— 1,2
372	139	5.6	5 45 35,55	3,706	64 5	86 23 53,30	55,59	— 7,5
373	. . .	8	5 45 43,28	3,522	70 50	86 25 49,21	52,86	. . .
374	. . .	8	5 46 6,71	. .	. .	86 31 40,72	. .	. . .
375	. . .	8	5 46 18,73	3,668	65 26	86 34 41,02	55,02	. . .
376	. . .	8	5 48 2,70	3,385	76 17	87 0 40,48	50,77	. . .
377	140	6	5 48 20,90	3,627	67 8	87 5 13,48	54,41	— 7,2
378	141	6	5 49 37,29	3,607	67 37	87 24 19,37	54,10	— 9,4
379	. . .	8	5 55 40,39	3,619	67 17	88 55 5,81	54,28	— 3,4
380	. . .	6.7	5 57 29,05	3,604	67 47	89 22 15,71	54,06	— 6,0

GEMINI.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800. H	Praec. annua +	Dist. a polo boreo.	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
381	1 h	5	5 51′ 58″,10	3″,633	66° 44′	87° 59′ 31″,54	54″,49	— 3″,0
382	. . .	8	5 53 51,09	3,643	66 21	88 27 46,42	54,65	. . .
383	2	6.7	5 54 37,28	3,647	66 21	88 39 19,14	54,66	— 8,5
384	3	6.7	5 57 35,39	3,629	66 52	89 23 50,77	54,44	— 5,8
385	4	7	5 58 22,05	3,627	66 59	89 35 30,73	54,40	— 9,7
386	5	7	5 59 16,49	3,664	65 33	89 49 7,33	54,97	— 7,3
387	6	6.7	6 0 11,64	3,624	67 4	90 2 54,61	54,36	— 8,7
388	7	4.5	6 2 48,57	3,613	67 27	90 42 8,51	54,20	—7,0
389	. . .	6	6 3 53,43	3,447	73 48	90 58 21,50	51,70	— 9,2
390	. . } d	8	6 4 5,67	3,633	65 59	91 1 25,04	54,80	. . .
391	8 } d	7	6 4 6,05	3,633	65 59	91 1 30,76	54,80	— 6,5
392	9	7	6 4 46,61	3,648	66 12	91 11 39,08	54,72	— 0,9
393	. . .	8	6 6 11,65	3,643	66 20	91 32 54,47	54,65	. . .
394	10	7	6 6 43,15	3,643	66 20	91 40 47,23	54,65	— 2,7
395	11	7	6 7 8,74	3,640	66 28	91 47 11,12	54,60	— 6,6
396	12	8	6 7 12,83	3,635	66 40	91 48 12,44	54,52	— 4,0
397	seq.	8	6 7 57,59	3,641	66 28	91 59 23,81	54,61	. . .
398	. . .	8	6 9 16,84	3,577	68 48	92 19 12,61	53,65	— 5,6
399	. . .	8	6 9 24,42	3,579	68 43	92 21 6,32	53,68	— 3,3
400	. . .	8	6 9 37,13	3,648	66 10	92 24 16,90	54,72	— 6,1
401	13 μ	3	6 10 51,64	3,614	67 24	92 42 54,56	54,20	— 5,3
402	. . .	7	6 12 24,51	3,685	64 52	93 6 7,63	55,27	— 4,9
403	. . .	7	6 13 22,38	3,639	66 28	93 20 35,63	54,58	— 5,3
404	. . .	7	6 13 23,64	3,637	66 35	93 20 54,60	54,55	— 6,0
405	14	7	6 13 42,38	3,591	68 15	93 25 35,64	53,86	— 5,6
406	. . } d	8	6 15 50,65	3,567	69 6	93 57 39,81	53,51	— 6,8
407	15 } d	6.7	6 15 51,28	3,568	69 6	93 57 49,14	53,51	— 6,2
408	16	6	6 16 2,79	3,560	69 24	94 0 41,89	53,40	— 6,2
409	18	5	6 17 5,37	3,553	69 40	94 16 20,50	53,29	— 5,4
410	17	7	6 17 14,65	3,567	69 6	94 18 39,81	53,51	. . .
411	. . .	7.8	6 17 44,31	3,777	61 40	94 26 4,62	56,65	— 5,5
412	. . .	7	6 19 23,87	3,909	57 25	94 50 58,04	58,64	— 4,9
413	19	8	6 20 1,10	3,440	74 1	95 0 16,51	51,61	— 4,2
414	seq.	6.7	6 20 7,05	3,441	73 58	95 1 45,81	51,62	— 6,4
415	20	7	6 20 37,28	3,489	72 6	95 9 19,20	52,33	+ 0,3
416	21	6.7	6 20 38,18	3,489	72 5	95 9 32,72	52,33	+ 1,3
417	. . .	7.8	6 22 5,01	3,877	58 25	95 31 15,12	58,15	— 0,1
418	22	7.8	6 22 50,93	3,552	70 26	95 42 43,93	52,98	— 7,0
419	. . .	7.8	6 23 21,93	3,451	73 39	95 50 29,01	51,76	— 5,8
420	23	7.8	6 24 27,05	3,463	73 3	96 6 45,81	51,95	— 4,7

GEMINI.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Aſcenſio recta media in temp. ad init. anni 1800.	Praec. annua +	Diſt. a polo boreo.	Aſcenſio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h ′ ″	″	° ′	° ′ ″	″	″
421	. . .	7.8	6 25 11,02	3,670	65 15	96 17 45,23	55,05	— 5,3
422	24 γ	3	6 26 9,30	3,453	73 27	96 32 19,18	51,80	— 3,2
423	. . .	8	6 26 56,50	3,775	61 39	96 44 7,56	56,62	. . .
424	. . .	8	6 28 13,01	3,537	70 10	97 3 15,22	53,06	— 4,7
425	25	7.8	6 28 44,26	3,774	61 38	97 11 3,96	56,61	— 3,3
426	26	5.6	6 30 45,28	3,485	72 10	97 41 19,20	52,28	— 4,2
427	27 ε	3	6 31 37,20	3,684	64 41	97 54 18,04	55,26	— 5,4
428	28	6	6 32 4,64	3,797	60 50	98 1 9,64	56,96	— 7,4
429	30 ξ¹	5.6	6 32 42,32	3,574	76 35	98 10 34,85	50,61	— 4,5
430	31 ξ²	4	6 34 3,81	3,366	76 54	98 30 57,20	50,49	— 6,2
431	32	8	6 34 39,97	3,361	77 7	98 39 59,52	50,41	— 6,1
432	33	8	6 38 18,85	3,447	73 35	99 34 42,73	51,71	—14,2
433	35	6	6 39 8,16	3,379	76 22	99 47 2,39	50,68	—11,9
434	36 d	8	6 39 33,42	3,592	68 1	99 53 21,31	53,88	— 6,2
435	34 9	4	6 39 36,02	3,953	55 49	99 54 0,34	59,29	— 7,1
436	37	6	6 43 0,36	3,688	64 23	100 45 5,40	55,32	—13,2
437	38 e	5.6	6 43 21,55	3,373	76 35	100 50 23,32	50,59	— 5,3
438	. . .	7	6 44 38,46	3,484	72 1	101 9 36,84	52,26	— 6,8
439	. . .	7	6 46 3,93	3,488	71 51	101 30 59,00	52,32	— 7,3
440	39	6.7	6 46 27,03	3,706	63 40	101 36 45,43	55,59	+ 2,6
441	seq.	8	6 46 37,60	3,706	63 40	101 39 23,96	55,59	. . .
442	40	6	6 47 6,55	3,700	63 50	101 46 38,28	55,51	— 5,0
443	41	7	6 48 21,21	3,437	63 48	102 5 18,14	51,56	— 8,4
444	. . .	8	6 48 32,57	3,796	60 31	102 8 8,59	56,95	— 8,6
445	. . .	6.7	6 48 45,80	3,440	63 39	102 11 26,98	51,61	— 6,0
446	42 ω²	6	6 50 12,97	3,652	65 31	102 33 14,58	54,78	— 5,6
447	. . .	6.7	6 50 46,27	3,800	60 21	102 41 34,11	57,01	— 7,1
448	43 ζ	4	6 52 14 06	3,554	69 9	103 3 30,97	53,31	+ 0,3
449	. . .	6.7	6 52 59,91	3,960	55 14	103 14 58,70	59,41	— 3,2
450	44 ω²	6.7	6 53 15,50	3,608	67 5	103 18 52,44	54,12	— 7,1
451	. . .	8	6 54 39,67	3,480	71 58	103 39 55,01	52,21	— 5,5
452	45 o	6	6 56 53,39	3,435	73 46	104 13 20,78	51,53	— 7,3
453	46 τ	5	6 58 23,87	3,821	59 26	104 35 58,03	57,32	— 6,4
454	47	7	6 58 58,16	3,723	62 50	104 44 32,34	55,85	— 8,3
455	. . .	7.8	6 59 51,19	3,420	74 21	104 57 47,90	51,30	— 5,9
456	48 m	6	7 0 16,73	3,646	65 33	105 4 11,02	54,70	— 6,4
457	49	7	7 0 30,72	3,689	63 56	105 7 40,84	55,34	— 3,6
458	50	7	7 1 23,44	3,415	74 30	105 20 51,59	51,24	— 5,7
459	51	5	7 1 52,72	3,459	73 31	105 28 10,77	51,65	— 4,8
460	52 n	6	7 2 27,38	3,664	64 47	105 36 50,74	54,96	— 5,0

GEMINI.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo magn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Diff. a polo boreo.	Ascensio recta media in part. aequat. ad init. anni 1900.	Praec. annua +	Differ. cum Piazzi
			h ′ ″	″	° ′	° ′ ″	″	″
461	53	6	7 3 26,98	3,748	61 46	105 51 44,74	56,22	— 6,3
462	. . .	8	7 4 39,42	3,712	62 58	106 9 51,33	55,69	— 6,3
463	. . .	7	7 5 15,70	3,438	73 31	106 18 55,54	51,57	— 4,8
464	54 λ	4.5	7 6 35,49	3,448	73 7	106 38 52,36	51,72	— 7,8
465	55 δ	3.4	7 8 10,01	3,583	67 40	107 2 30,19	53,75	— 7,1
466	56 q	5.6	7 10 8,21	3,542	69 11	107 32 3,13	53,14	— 7,4
467	57 A	6	7 11 16,75	3,662	64 35	107 49 11,21	54,94	— 8,5
468	58	7	7 11 26,33	3,606	66 41	107 51 34,99	54,09	— 9,8
469	59	7.8	7 12 5,72	3,733	61 59	108 1 25,75	56,01	— 2,8
470	. . .	8	7 12 23,28	3,605	66 42	108 5 49,20	54,08	— 5,1
471	60 i	4	7 13 17,39	3,737	61 49	108 19 20,80	56,06	— 4,3
472	. . .	7.8	7 15 0,00	3,567	68 5	108 44 59,93	53,51	— 3,5
473	61 r	7	7 15 8,33	3,535	69 21	108 47 4,87	53,03	— 1,9
474	63 p	6	7 15 51,27	3,565	68 10	108 57 49,08	53,48	— 2,0
475	62 s	5	7 16 13,53	3,852	57 50	109 3 22,89	57,79	— 4,9
476	64 b^1	5.6	7 16 51,99	3,745	61 29	109 12 59,89	56,15	— 8,9
477	65 b^2	5.6	7 17 21,37	3,737	61 41	109 20 20,58	56,06	—11,6
478	. . .	8	7 18 12,62	3,737	61 41	109 33 9,25	56,05	— 4,8
479	. . .	8	7 18 59,88	3,727	61 58	109 44 58,20	55,91	— 5,1
480	66 a	2	7 21 48,81	3,853	57 41	110 27 12,06	57,80	— 1,5
481	67	7	7 22 0,00	3,418	73 57	110 29 59,94	51,28	— 7,9
482	68 k	5	7 22 10,96	3,422	73 45	110 32 44,36	51,34	+ 0,9
483	69 v	5	7 23 34,85	3,703	62 40	110 53 42,81	55,55	— 3,8
484	73	8	7 25 21,96	3,728	61 43	111 20 29,40	55,92	. . .
485	70	6	7 25 23,95	3,945	54 31	111 20 59,29	59,18	— 4,6
486	. . .	7.8	7 25 51,01	3,495	70 39	111 27 45,11	52,43	— 5,2
487	71 o	6	7 26 5,42	3,929	54 58	111 31 21,26	58,94	— 5,6
488	. . .	7.8	7 26 7,03	3,652	65 12	111 31 45,42	54,49	— 6,0
489	. . .	8	7 27 4,77	3,726	61 43	111 46 11,47	55,89	. . .
490	. . .	7.8	7 27 5,94	3,628	65 20	111 46 24,07	54,43	— 7,2
491	74 i	6	7 27 55,06	3,465	71 53	111 58 45,88	51,95	— 4,2
492	. . .	7.8	7 30 38,35	3,364	76 4	112 39 35,23	50,47	— 7,1
493	75 e	6	7 30 47,54	3,752	60 39	112 41 53,14	56,28	— 5,1
494	. . .	7	7 31 26,26	3,577	67 8	112 51 35,92	53,66	— 6,6
495	76 c	6	7 31 54,00	3,664	63 45	112 58 30,06	54,97	— 4,6
496	77 x	4	7 32 21,32	3,628	65 8	113 5 19,82	54,42	— 5,8
497	78 β	2	7 33 3,30	3,688	61 30	113 15 49,56	55,32	— 3,4
498	79	7	7 33 23,97	3,524	69 13	113 20 59,59	52,86	— 2,6
499	81 g	6	7 34 31,85	3,479	71 1	113 37 57,74	52,19	— 5,0
500	80 π	5.6	7 34 35,43	3,881	56 6	113 38 51,49	58,21	—10,3

GEMINI.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Dist. a polo boreo	Ascensio recta media in part. aequat. ad init. anni 1900.	Praec. annua +	Differ. cum Piazzi.
			h m s	s	° ′	° ′ ″	s	s
501	82	6	7 36 35,10	3,592	66 23	114 8 46,46	53,88	— 7,5
502	. . .	7	7 40 18,02	3,494	70 10	115 4 30,31	52,42	— 6,3
503	84	7.8	7 41 7,54	3,566	67 10	115 16 51,07	53,49	— 6,1
504	85 φ	5	7 41 14,14	3,680	62 44	115 18 32,16	55,21	— 5,2
505	85 l	6	7 43 58,59	3,506	69 36	115 59 38,82	52,59	— 7,1

CANCER.

506	1 } d	6.	7 45 37,35	3,408	73 41	116 24 20,18	51,12	— 7,1
507	. . }	8	7 45 40,15	3,409	73 41	116 25 2,52	51,14	. . .
508	. . .	7.8	7 47 6,19	3,424	72 57	116 46 31,90	51,36	— 6,4
509	$2e^2$	6	7 48 48,46	3,636	64 4	117 12 6,88	54,54	— 3,9
510	. . .	7.8	7 49 8,25	3,461	71 13	117 17 3,81	51,92	— 5,3
511	3	6	7 49 18,59	3,440	72 9	117 19 38,90	51,60	— 0,9
512	$4e^2$	6.7	7 49 38,80	3,627	64 22	117 24 41,96	54,41	— 8,6
513	5	6	7 50 5,48	3,424	73 0	117 31 22,25	51,36	— 8,8
514	6	5.6	7 51 12,80	3,695	61 39	117 48 11,95	55,43	— 6,5
515	7	7.8	7 52 0,97	3,550	67 23	118 0 14,59	53,25	— 5,3
516	8	6	7 53 55,22	3,544	76 19	118 28 48,35	50,17	— 6,4
517	. . .	7.8	7 54 21,77	3,352	75 56	118 35 26,50	50,28	— 5,5
518	$9\mu^2$	6	7 54 26,31	3,490	66 48	118 36 34,69	52,35	— 5,6
519	$10\mu^2$	6.7	7 55 58,55	3,535	67 51	118 59 38,18	53,03	— 5,2
520	11	6.7	7 56 34,27	3,679	61 57	119 8 34,08	55,19	— 1,7
521	12	6	7 57 31,05	3,353	75 47	119 22 45,79	50,30	— 5,5
522	$13\psi^1$	6	7 58 6,49	3,635	63 35	119 31 37,37	54,54	— 7,4
523	$14\psi^2$	7	7 58 23,19	3,627	63 54	119 35 47,78	54,41	— 5,8
524	. . .	7.8	7 58 35,24	3,426	72 24	119 38 48,62	51,40	— 6,0
525	. . .	7	8 0 21,48	3,270	79 36	120 5 22,21	49,06	— 5,7
526	$15\psi^3$	5.6	8 0 43,47	3,732	59 45	120 10 52,01	55,98	— 4,8
527	16 ζ	5.6	8 0 45,54	3,438	71 46	120 10 53,07	51,58	— 6,9
528	. . .	7	8 2 43,12	3,438	71 44	120 40 46,84	51,57	— 3,3
529	17 β	4	8 5 39,69	3,256	80 12	121 24 55,35	48,84	— 6,4
530	. . .	7	8 6 41,18	3,248	80 32	121 40 17,70	48,73	— 5,1
531	18 χ	6	8 7 53,40	3,657	62 9	121 58 21,03	54,86	— 6,0
532	19 λ	6	8 8 37,38	3,577	65 21	122 9 20,76	53,66	— 6,5
533	. .	8	8 11 26,05	3,283	78 44	122 51 30,79	49,24	— 3,8
534	$20\,d^2$	6	8 11 53,73	3,442	71 2	122 58 25,92	51,64	+ 0,2
535	21	7	8 12 58,20	3,281	78 44	123 14 33,05	49,22	— 7,6

CANCER.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Diff. a polo boreo.	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h ′ ″	″	° ′	° ′ ″	″	″
536	22 φ²	6.7	8 14 16,35	3,663	61 28	123 34 5,29	54,95	— 5,5
537	25 d²	6	8 14 29,67	3,412	72 18	123 37 25,01	51,20	— 6,1
538	23 φ²	6	8 14 40,09	3,643	62 25	123 40 1,39	54,65	+ 2,3
539	24 υ²	7	8 14 44,75	3,580	64 49	123 41 11,24	53,71	— 3,0
540	27	8	8 15 39,35	3,321	76 42	123 54 50,21	49,82	. . .
541	28 υ²	7	8 16 43,91	3,569	65 12	124 10 58,67	53,54	— 6,2
542	29	6	8 17 26,83	3,354	75 8	124 21 42,42	50,27	— 1,9
543	. . .	8	8 17 46,60	3,577	65 0	124 26 38,97	53,66	— 8,0
544	. . .	8	8 17 47,73	3,615	63 9	124 26 55,95	54,23	— 6,5
545	30 υ³	6	8 19 39,56	3,563	65 15	124 54 53,30	53,46	— 4,4
546	31 ϑ	5.6	8 20 10,50	3,431	71 14	125 2 37,55	51,47	— 2,0
547	. . .	7.8	8 20 11,81	3,448	70 21	125 2 57,21	51,73	— 3,7
548	33 η	6	8 21 7,39	3,480	68 53	125 16 50,80	52,20	— 4,3
549	32 υ⁴	7.8	8 21 9,38	3,561	65 15	125 17 20,70	53,42	— 5,7
550	34	6.7	8 21 46,01	3,264	79 16	125 26 30,12	48,98	— 4,6
551	. . .	7.8	8 22 39,14	3,327	76 4	125 39 47,11	49,91	— 5,1
552	35	7.8	8 23 48,49	3,458	69 44	125 57 7,28	51,88	— 4,8
553	. . .	8	8 24 13,44	3,461	69 33	126 3 21,66	51,92	+ 3,8
554	. . .	7.8	8 24 53,73	3,367	74 0	126 13 25,91	50,51	— 4,2
555	36 c¹	6.7	8 26 14,52	3,254	79 40	126 33 37,79	48,82	— 4,8
556	. . .	8	8 26 17,69	3,448	70 5	126 34 25,50	51,72	— 3,1
557	37 c²	7.8	8 27 14,45	3,252	79 44	126 48 36,68	48,79	— 8,0
558	. . .	8	8 27 31,89	3,461	69 21	126 52 58,40	51,92	. . .
559	38 o	7	8 28 11,97	3,456	69 32	127 2 59,47	51,85	— 3,5
560	39	6	8 28 54,96	3,461	69 18	127 8 44,44	51,93	— 6,0
561	40	6	8 28 40,13	3,460	69 20	127 10 1,89	51,92	— 3,3
562	. . .	6	8 28 52,81	3,460	69 38	127 13 12,21	51,91	— 5,2
563	41 ε	7	8 28 57,38	3,451	69 45	127 14 20,75	51,77	— 4,7
564	42 e	7.8	8 29 13,02	3,454	69 35	127 18 15,34	51,81	— 6,3
565	. . .	7.8	8 29 26,34	3,451	69 43	127 21 35,10	51,77	— 5,0
566	. . .	7	8 30 19,63	3,456	69 25	127 34 54,43	51,84	— 7,1
567	45 γ	5.6	8 31 41,41	3,488	67 49	127 55 21,11	52,34	— 4,6
568	44	8	8 31 44,69	3,418	71 9	127 56 10,29	51,27	— 8,3
569	45 A³	6.7	8 32 10,08	3,308	76 37	128 2 51,13	49,63	— 6,5
570	46	6	8 33 3,62	3,698	58 35	128 15 54,37	55,48	— 9,1
571	47 δ	4.5	8 33 17,92	3,417	71 7	128 19 28,78	51,27	— 5,4
572	49 b	6.7	8 33 52,76	3,258	79 12	128 28 11,35	48,87	— 4,8
573	. . . d	8	8 34 52,00	3,649	60 31	128 38 0,05	54,73	. . .
574	48 i d	4.5	8 34 33,96	3,649	60 31	128 38 29,34	54,73	— 7,7
575	50 A²	6	8 35 57,19	3,294	77 10	128 59 17,90	49,42	— 4,1

CANCER.

Num. Catal. ZACH.	Num. Catalog. FLAMST.	Ordo mgn.	Aſcenſio recta media in temp. ad init. anni 1800.	Praec. annua +	Diſt. a polo boreo.	Aſcenſio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum PIAZZI.
			h ′ ″	″	° ′	° ′ ″	″	″
576	. . .	7.8	8 37 38,83	3,303	76 43	129 24 42,43	49,54	— 4,3
577	54	6.7	8 39 52,13	3,355	73 55	129 58 1,95	50,32	— 3,8
578	52	7.8	8 39 57,98	3,367	73 16	129 59 29,68	50,51	— 5,4
579	51 σ^1	6	8 40 11,43	3,729	56 47	130 2 51,51	55,93	— 4,1
580	53 ξ^1	7	8 40 25,32	3,626	61 0	130 6 19,83	54,39	— 6,3
581	55 ξ^2	6.7	8 40 39,61	3,627	60 55	130 9 54,14	54,41	—11,2
582	57 ι^2	5.6	8 42 0,79	3,677	58 40	130 30 11,81	55,16	— 7,3
583	. . .	8	8 43 21,36	3,329	75 0	130 50 20,43	49,94	— 5,4
584	58 ξ^3	6	8 43 39,17	3,612	61 19	130 54 47,58	54,18	— 7,7
585	59 σ^2	5.6	8 44 34,29	3,730	56 20	131 8 34,31	55,95	— 7,8
586	. . .	8	8 44 53,16	3,353	73 40	131 13 17,44	50,30	. . .
587	60 α^2	6	8 44 59,57	3,281	77 37	131 14 53,53	49,21	— 6,4
588	61	6	8 45 47,71	3,663	59 0	131 26 55,65	54,94	— 3,7
589	. . .	7.8	8 45 52,34	3,383	72 6	131 28 5,03	50,74	— 3,5
590	62 σ^2	6	8 46 4,34	3,347	73 55	131 31 5,14	50,21	— 5,1
591	63 σ^2	6	8 46 23,91	3,352	73 40	131 35 58,64	50,28	— 3,1
592	64 σ^3	6	8 47 13,60	3,705	56 49	131 48 24,02	55,58	— 4,4
593	65 α^2	4	8 47 31,91	3,282	77 23	131 52 58,66	49,23	— 4,7
594	. . .	7	8 47 51,76	3,399	71 6	131 57 56,43	50,98	— 2,9
595	. . .	8	8 48 25,95	3,302	76 9	132 6 29,31	49,53	— 3,8
596	66 σ^4	6	8 49 6,19	3,715	56 59	132 16 32,84	55,73	— 3,1
597	67 ξ^5	7	8 49 51,78	3,599	61 19	132 27 56,69	53,98	— 5,7
598	68	7.8	8 50 29,04	3,676	72 9	132 37 15,58	50,63	— 8,6
599	69	6	8 51 1,04	3,522	64 46	132 45 15,60	52,83	— 2,4
600	70 ξ^6	6.7	8 52 13,03	3,594	61 19	133 3 15,48	53,90	— 5,9
601	. . .	8	8 52 18,31	3,427	69 21	133 4 34,64	51,40	. . .
602	. . .	8	8 53 44,01	3,259	78 22	133 26 0,21	48,88	— 4,0
603	71	7.8	8 54 30,93	3,376	71 49	133 37 44,01	50,65	— 5,6
604	73	7	8 55 54,48	3,336	73 56	133 58 37,24	50,04	— 6,9
605	72 τ	6	8 55 57,73	3,623	59 33	133 59 25,90	54,35	— 6,4
606	. . .	8	8 56 41,69	3,325	74 31	134 10 25,31	49,88	. . .
607	76 κ	5.6	8 56 54,29	3,253	78 32	134 13 34,42	48,80	— 5,3
608	75	6.7	8 56 59,81	3,556	62 33	134 14 57,19	53,35	— 8,6
609	. . .	8	8 57 3,74	3,324	74 31	134 15 56,17	49,86	. . .
610	78	6.7	8 57 48,34	3,373	71 44	134 27 5,14	50,60	— 6,6
611	77 ξ	5.6	8 57 50,05	3,457	67 9	134 27 30,74	51,86	— 5,7
612	79	6	8 58 50,05	3,459	67 12	134 42 30,80	51,89	— 6,1
613	. . .	7	8 58 53,03	3,267	77 38	134 43 15,51	49,01	— 4,4
614	80	7.8	9 0 41,69	3,380	71 9	135 10 25,30	50,70	— 7,3
615	81 π	6.7	9 1 19,90	3,325	74 12	135 19 58,43	49,87	— 2,2

CANCER.

Num. Astral. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Dist. a polo boreo.	Ascensio recta media in part. sequat. ad init. anni 1800.	Praec. annua +	Diff. cum Piazz.
			♋ ° ′ ″	″	° ′	° ′ ″	″	″
616	82	6	9 4 10,29	3,321	74 14	136 2 34,36	49,81	— 7,7
617	seq.	8	9 4 49,42	3,320	74 14	136 12 21,28	49,80	. .
618	83	6	9 7 47,91	3,365	71 27	136 56 58,69	50,48	+ 11,6
619	. . .	8	9 9 21,32	3,389	70 4	137 20 19,80	50,85	— 8,1

LEO.

			♌					
620	. . .	7	9 6 59,52	3,259	77 40	136 44 49,82	48,89	— 6,3
621	. .	7	9 7 31,97	3,525	62 55	136 52 59,53	52,88	— 4,8
622	. .	7.8	9 8 44,42	3,231	79 22	137 11 6,34	48,46	— 5,3
623	. .	7 8	9 12 50,71	3,193	81 26	138 12 40,60	47,90	— 7,0
624	1 ν	5	9 12 58,55	3,514	62 58	138 14 38,24	52,71	— 3,0
625	. .	8	9 17 15,28	3,198	80 57	139 18 49,19	47,97	. .
626	2 ω	6	9 17 43,79	3,211	80 5	139 25 56,81	48,17	— 5,2
627	3	6.7	9 17 49,34	3,197	80 57	139 27 20,15	47,96	— 5,7
628	4 λ	4.5	9 20 16,99	3,439	66 9	140 4 14,88	51,59	— 8,5
629	5 ξ	5	9 21 9,37	3,243	77 49	140 17 20,50	48,65	— 6,1
630	6 h	6	9 21 13,39	3,219	79 25	140 18 20,83	48,29	— 5,9
631	. .	7.8	9 24 7,51	3,261	76 28	141 1 52,61	48,92	— 5,3
632	7	6.7	9 24 56,05	3,287	74 44	141 14 0,68	49,31	— 4,5
633	8	6.7	9 25 59,47	3,319	72 40	141 29 52,11	49,78	— 4,7
634	9	6	9 26 21,65	3,456	64 26	141 35 24,77	51,84	— 9,2
635	10	5.6	9 26 38,30	3,172	82 16	141 39 34,49	47,58	— 4,5
636	11	6.7	9 27 5,54	3,285	74 45	141 46 23,13	49,27	— 5,3
637	. .	7.8	9 27 40,07	3,383	68 48	141 55 1,04	50,74	— 4,0
638	12	6.7	9 27 41,15	3,465	63 44	141 55 17,18	51,98	— 2,7
639	. .	8	9 28 23,76	3,267	75 48	142 5 56,40	49,00	— 6,3
640	13	6	9 30 6,50	3,476	63 11	142 31 37,49	52,05	— 6,0
641	14 o	4	9 30 27,75	3,213	79 12	142 36 56,31	48,20	— 4,9
642	15 f	6	9 31 47,52	3,546	59 5	142 56 52,82	53,19	— 1,4
643	. .	7	9 32 9,12	3,368	68 54	143 2 16,81	50,53	— 4,2
644	16 ψ	6	9 32 49,40	3,272	75 4	143 12 20,97	49,09	— 5,8
645	17 .	3	9 34 28,33	3,423	65 19	143 37 4,91	51,35	— 3,7
646	18	6	9 35 35,94	3,236	77 16	143 53 59,07	48,55	— 5,9
647	. . .	8	9 36 28,96	3,367	68 28	144 7 14,40	50,51	— 4,2
648	19	7	9 36 39,92	3,231	77 31	144 9 58,77	48,47	— 4,7
649	20	6.7	9 38 37,09	3,372	67 54	144 39 16,28	50,60	— 6,9

L E O.

Num. Catal. ZACH.	Num. Catalog. FLAMST.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Decl. a polo boreo	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum PIAZZI.
			h ′ ″	″	° ′	° ′ ″	″	″
650	21	7.8	9 40 2,66	3,253	77 14	145 0 39,85	8,49	— 5,6
651	23	7.8	9 40 11,63	3,250	76 0	145 2 54,39	4875	— 7,3
652	22 g	6	9 40 30,16	3,421	64 40	145 7 31,36	51,31	— 8,9
653	24 μ	4	9 41 21,71	3,446	63 3	145 20 25,71	51,68	— 4,7
654	. . .	8	9 43 30,50	3,178	80 59	145 52 37,52	47,67	— 6,3
655	25	8	9 47 10,36	3,089	87 40	146 47 35,34	46,34	. . .
656	26	7.8	9 47 18,13	3,271	73 50	146 49 31,91	49,07	— 4,2
657	27 ι	5.6	9 47 26,89	3,233	76 36	146 51 43,32	48,50	— 5,8
658	. . .	8	9 47 56,36	3,213	78 4	146 59 5,44	48,19	. . .
659	. . .	6	9 48 2,05	3,489	59 24	147 0 30,73	52,34	— 6,6
660	. . .	8	9 48 18,47	3,356	67 44	147 4 37,05	50,34	. . .
661	29 π	4.5	9 49 37,84	3,174	81 0	147 24 27,59	47,60	— 2,0
662	. . .	7.8	9 52 54,17	3,195	79 8	148 13 32,62	47,92	— 4,7
663	. . .	7.8	9 53 24,78	3,216	77 25	148 21 11,70	48,24	— 5,3
664	. . .	8	9 54 29,41	3,169	81 3	148 37 21,22	47,54	— 3,4
665	. . .	7	9 54 48,47	3,208	73 17	148 42 7,01	49,02	— 5,2
666	30 η	3.4	9 56 24,72	3,279	72 16	149 6 10,82	49,18	— 3,3
667	31 A	4.5	9 57 16,62	3,191	79 2	149 19 9,34	47,87	— 4,7
668	32 κ	1	9 57 42,38	3,212	77 4	149 25 35,64	48,18	— 6,7
669	16Sext.	6	9 58 45,41	3,144	82 51	149 41 21,22	47,16	— 6,2
670	. . .	8	9 58 54,23	3,185	79 26	149 43 33,51	47,78	— 5,3
671	33	7.8	9 59 52,72	3,259	73 19	149 58 10,85	48,89	— 9,0
672	34	6	10 0 51,89	3,229	75 40	150 12 58,37	48,43	— 4,1
673	. . .	7	10 3 27,88	3,324	67 50	150 51 58,21	49,86	— 3,9
674	. . .	8	10 3 39,81	3,259	72 52	150 54 57,20	48,89	— 4,7
675	. . .	6	10 5 20,89	3,277	71 16	151 20 13,31	49,16	— 7,0
676	35	6.7	10 5 26,24	3,351	65 30	151 21 33,56	50,26	— 5,7
677	36 ζ	4.5	10 5 32,32	3,350	65 35	151 23 4,74	50,24	— 2,3
678	37	6	10 5 55,64	3,213	75 17	151 28 54,56	48,20	— 3,6
679	39	6	10 6 12,95	3,343	65 54	151 33 14,26	50,15	— 5,9
680	leq.	8	10 6 17,63	3,343	65 54	151 34 24,39	50,15	. . .
681	38	8	10 6 45,98	3,302	69 0	151 41 29,73	49,53	. . .
682	. . .	7.8	10 7 42,32	3,212	76 23	151 55 34,81	48,18	— 4,2
683	40	6	10 8 49,79	3,292	69 31	152 12 26,86	49,38	— 5,2
684	41 γ	2	10 8 55,38	3,297	69 9	152 13 50,63	49,45	— 4,1
685	42	6	10 11 3,97	3,235	74 1	152 45 59,54	48,52	— 1,0
686	. . .	7.8	10 11 40,35	3,167	80 2	152 55 5,32	47,50	— 3,3
687	43	6	10 12 31,88	3,139	82 27	153 7 58,24	47,09	— 5,6
688	. . .	8	10 13 42,93	3,182	78 24	153 25 43,90	47,73	— 4,2
689	44	6	10 14 42,01	3,161	80 12	153 40 30,16	47,42	+ 3,8

L E O.

Num. Catal. ZACH.	Num. Catalog. FLAMST.	Ordo mgn.	Ascenſio recta media in temp. ad init. anni 1800.	Praec. annua +	Diſt. a polo boreo.	Aſcenſio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum PIAZZI.
			h ′ ″	″	° ′	° ′ ″	″	″
690	. . .	8	10 15 2,28	3,161	80 15	153 45 34,27	47,41	+ 1,7
691	45	6	10 17 4,37	3,160	79 13	154 16 5,54	47,39	— 4,0
692	. . .	7.8	10 18 5,89	3,217	74 38	154 31 28,30	48,26	— 3,1
693	. . .	8	10 18 35,99	3,173	78 49	154 38 59,85	47,59	— 2,7
694	46 i	6	10 21 50,32	3,211	74 50	155 22 34,85	48,16	—10,1
695	47 ϱ	4	10 22 15,96	3,160	79 40	155 35 59,41	47,41	— 5,1
696	. . .	8	10 23 12,42	3,153	80 19	155 48 6,3:	47,29	. . .
697	48	5.6	10 24 21,41	3,135	82 1	156 5 21,13	47,03	— 6,0
698	49	6	10 24 51,84	3,151	80 19	156 7 57,57	47,27	— 6,2
699	. . .	8	10 25 38,79	3,151	80 19	156 24 41,8:	47,26	. . .
700	. . .	8	10 27 1,09	3,254	71 41	156 45 16,30	48,51	— 4,9
701	50	6.7	10 28 9,86	3,221	72 50	157 2 27,96	48,31	—12,7
702	ſeq.	8	10 28 50,58	3,219	72 50	157 12 38,7:	48,29	. . .
703	. . .	7 8	10 29 12,94	3,149	80 7	157 18 14,13	47,24	— 4,2
704	. l^{x}	6	10 31 7,75	3,193	75 12	157 46 56,28	47,89	. . .
705	. . .	8	10 35 6,06	3,152	81 26	158 46 30,90	46,98	— 2,1
706	51 m	6	10 35 36,46	3,234	70 3	158 54 6,93	48,51	+ 2,1
707	52 k	6	10 35 48,75	3,188	74 45	158 57 11,21	47,82	— 3,7
708	53 l^{2}	6	10 38 43,90	3,155	78 24	159 40 58,53	47,33	— 6,2
709	. . .	8	10 44 22,16	3,112	83 5	161 5 31,41	46,68	— 5,3
710	54	4.5	10 44 45,41	3,268	64 11	161 11 21,13	49,02	— 2,4
711	55	6	10 45 24,65	3,072	88 12	161 21 9,70	46,10	— 4,0
712	. . .	7	10 45 29,24	3,244	66 35	161 22 18,62	48,66	— 4,5
713	56	6	10 45 37,68	3,114	82 45	161 24 25,2:	46,71	— 5,7
714	57	6	10 45 54,82	3,070	88 30	161 28 42,27	46,0-	— 6,3
715	. . .	6	10 47 54,65	3,215	69 19	161 58 39,41	48,23	— 4,9
716	. . .	7.8	10 49 13,59	3,152	77 14	162 18 20,80	47,28	— 5,2
717	58 d } d	5	10 50 15,67	3,093	85 18	162 33 25,06	46,39	— 7,1
718	. . }	8	10 50 17,83	3,093	85 18	162 34 27,45	46,40	. . .
719	59 c	5.6	10 50 22,41	3,110	82 50	162 35 56,11	46,65	— 6,1
720	61	5.6	10 51 37,55	3,050	91 25	162 54 25,28	45,75	— 6,4
721	60 b	5	10 51 37,84	3,214	68 45	162 54 27,53	48,21	— 5,8
722	62 g	6	10 53 22,22	3,067	88 56	163 20 33,26	46,00	— 6,3
723	ſeq.	8	10 53 46,29	3,066	88 57	163 26 34,30	45,99	— 5,4
724	63 χ	4.5	10 54 41,54	3,115	81 35	163 40 23,08	46,73	— 4,1
725	65 p	5.6	10 56 41,61	3,079	86 58	164 10 24,11	46,18	— 5,8
726	64	6.7	10 56 56,07	3,224	65 36	164 14 0,98	48,36	— 7,5
727	67	6	10 58 3,85	3,231	64 16	164 30 57,77	48,47	— 7,8
728	. . .	8	10 58 4,05	3,057	90 48	164 31 0,5:	45,86	. . .
729	. . .	8	10 58 5,44	3,058	90 15	164 31 21,56	45,87	. . .

L E O.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Aſcenſio recta media in temp. ad init. anni 1800.	Praec. annua +	Diſt. a polo boreo.	Aſcenſio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Diff. cum Piazzi.
			H ′ ″	″	° ′	″ ′ ″	″	″
730	. . .	8	10 58 16,85	3,053	90 58	164 34 12,7	45,80	. . .
731	66	6.7	10 59 1,01	3,058	90 15	164 45 15,21	45,87	— 8,0
732	. . .	8	11 0 6,77	3,114	81 2	165 1 41,52	46,71	— 6,5
733	. . .	7	11 1 13,81	3,153	74 31	165 18 27,14	47,30	— 7,0
734	. .	7.8	11 3 9,68	3,200	68 47	165 47 25,21	48,00	— 8,1
735	68 δ	3	11 3 26,95	3,189	68 23	165 51 44,28	47,83	— 5,3
736	69 s	5.6	11 3 31,23	3,064	89 0	165 52 48,44	45,97	— 4,9
737	. . .	6.7	11 3 37,61	3,112	80 51	165 54 24,21	46,68	— 3,2
738	70 ϑ	3	11 3 44,04	3,156	73 29	165 56 0,63	47,34	—13,4
739	71	7	11 4 8,69	3,161	72 28	166 2 10,40	47,42	. . .
740	72	5.6	11 4 32,04	3,203	65 49	166 8 0,61	48,05	— 4,1
741	73 n	5.6	11 5 23,22	3,141	75 36	166 20 48,37	47 11	— 6,4
742	. . .	6.7	11 5 29,18	3,136	76 18	166 22 17,71	47,04	- 5,7
743	74 φ	5	11 6 29,66	3,048	92 34	166 37 24,18	45,72	+ 3,5
744	75	5.6	11 6 59,48	3,076	93 7	166 44 52,13	46 14	— 4,1
745	. . .	7.8	11 7 0,59	3,239	61 33	166 45 8,92	48,59	— 3,8
746	. . .	7.8	11 8 1,62	3,039	93 58	167 0 24,23	45,58	— 5,3
747	76	6	11 8 38,93	3,073	87 15	167 9 43,87	46,10	— 8,2
748	77 σ	4	11 10 49,12	3,095	82 53	167 42 16,86	46,43	— 7,9
749	. . .	7.8	11 11 10,01	3,098	82 16	167 47 30,12	46,47	— 9,1
750	. . .	7.8	11 12 54,45	3,097	82 19	168 13 36,80	46,45	— 6,1
751	. . .	7	11 13 3,46	3,065	88 46	168 15 51,92	45 98	— 4,7
752	78 ι	4	11 13 29,35	3,116	78 22	168 22 20,17	46,74	—11,8
753	79 r	5.6	11 13 46,61	3,070	87 30	168 26 39,19	46,06	— 6,8
754	. . .	6.7	11 14 35,81	3,118	77 28	168 38 57,20	46,77	— 4,1
755	. . .	8	11 14 52,17	3,091	85 10	168 43 2,53	46,36	— 5,5
756	. . .	8	11 15 8,19	3,197	62 9	168 47 2,82	47,96	— 4,8
757	81	6	11 15 9,89	3,141	72 27	168 47 28,34	47,12	— 7,3
758	82	7	11 15 22,35	3,079	85 36	168 50 35,18	46,19	— 6,3
759	80	7	11 15 33,13	3,082	85 2	168 53 17,02	46,23	. . .
760	83 d	7.8	11 16 37,84	3,078	85 54	169 9 27,55	46,16	— 0,6
761	. .	7.8	11 16 38,79	3,078	85 54	169 9 41,82	46,16	+ 4,1
762	. . .	7.8	11 17 37,97	3,116	76 56	169 24 29,60	46,74	— 1,1
763	84 τ	4	11 17 38,99	3,076	86 3	169 24 44,78	46,14	— 5,7
764	. . .	7	11 17 40,47	3,057	90 36	169 25 7,00	45,86	+ 2,0
765	. . .	8	11 17 49,19	3,060	89 48	169 27 17,81	45,90	— 3,8
766	. . .	7.8	11 18 9,76	3,076	86 7	169 32 26,40	46,14	— 6,4
767	. . .	7.8	11 19 10,57	3,061	89 45	169 47 38,53	45,91	— 4,0
768	85	6	11 19 15,94	3,130	73 29	169 48 59,12	46,94	—11,4
769	. . .	7.8	11 19 19,74	3,096	81 18	169 49 56,03	46,44	— 5,0

L E O.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo magn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Dist. a polo boreo.	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h m s	s	° ′	° ′ ″	s	s
770	86	6	11 20 1,91	3,142	70 29	170 0 28,71	47,13	— 10,6
771	87 e	4-5	11 20 6,05	3,051	91 54	170 1 30,73	45,76	— 5,2
772	. . .	8	11 21 6,44	3,076	85 50	170 16 36,62	46,14	— 8,0
773	88	6	11 21 24,65	3,122	74 31	170 21 9,76	46,82	— 8,0
774	. . .	7	11 23 2,71	3,076	85 32	170 45 40,64	46,14	— 6,4
775	89	6	11 24 7,59	3,074	85 59	171 1 53,77	46,11	— 6,8
776	90	6	11 24 17,05	3,128	72 6	171 4 15,75	46,91	— 4,4
777	. . .	7.8	11 26 17,09	3,085	82 47	171 34 16,41	46,27	— 5,0
778	91 ν	4-5	11 26 42,44	3,060	89 45	171 40 36,67	45,91	— 3,7
779	. . .	8	11 26 59,75	3,089	82 37	171 44 56,22	46,33	— 4,5
780	. . .	8	11 30 9,07	3,066	87 56	172 32 16,10	45,99	— 6,1
781	92	5.6	11 30 22,03	3,130	67 32	172 35 30,45	46,96	— 5,6
782	. . .	7.8	11 31 43,10	3,099	76 36	172 55 46,53	46,48	— 4,7
783	. . .	7.8	11 33 21,49	3,132	64 53	173 20 22,32	46,98	— 5,3
784	. . .	7	11 33 46,97	3,135	63 40	173 26 44,60	47,02	— 4,1
785	. . .	7.8	11 36 38,23	3,122	65 10	174 9 33,41	46,83	— 6,4
786	93	4	11 37 39,03	3,110	68 40	174 24 45,44	46,65	— 4,0
787	. . .	6.7	11 38 20,42	3,095	74 36	174 35 6,25	46,41	— 1,8
788	94 β	1.2	11 38 50,74	3,067	74 39	174 42 41,05	46,00	— 4,8
789	σ^2	7	11 42 11,21	3,091	72 50	175 32 48,09	46,37	. .
790	σ^2	7.8	11 42 27,07	3,090	73 27	175 36 46,01	46,35	— 3,7
791	95 o^3	5.6	11 45 22,59	3,085	73 14	176 20 38,91	46,28	— 4,4
792	. .	7.8	11 46 9,83	3,082	74 42	176 32 27,73	46,23	— 5,2
793	. . .	7	11 47 26,26	3,084	71 25	176 51 33,90	46,27	— 3,9
794	. . .	7.8	11 49 49,33	3,082	69 28	177 27 20,02	46,25	— 5,8
795	. . .	7.8	11 56 56,60	3,064	75 54	179 14 9,04	45,96	— 6,0

V I R G O.

			h					
796	1 ω	6.7	11 28 8,40	3,089	80 45	172 2 6,07	46,34	— 4,8
797	. . .	6	11 31 53,50	3,076	84 9	172 58 22,53	46,15	— 5,1
798	. . .	6.7	11 33 42,31	3,045	84 26	173 25 34,71	45,67	— 3,7
799	. . .	8	11 34 12,88:	3,081	81 38	173 33 12,2:	46,22	. . .
800	2 ξ^2	5	11 34 57,99	3,084	81 38	173 44 29,88	46,26	— 6,7
801	3 ι	4-5	11 35 34,35	3,079	82 21	173 53 34,87	46,18	— 6,1
802	4 ξ^2	5.6	11 37 38,05	3,081	80 39	174 24 30,79	46,22	— 8,8
803	5 β	3	11 40 16,52	3,125	87 6	175 4 7,80	46,89	— 3,2
804	. . .	6	11 40 49,41	3,051	94 13	175 12 21,20	45,77	— 7,3
805	. . .	8	11 43 36,04	3,063	88 20	175 54 0,53	45,94	— 4,1

V I R G O.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Aſcenſio recta media in temp. ad init. anni 1800.	Praec. annua +	Diſt. a polo boreo.	Aſcenſio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h ′ ″	″	° ′	° ′ ″	″	″
806	. . .	8	11 43 38,68	3,055	92 40	175 54 40,12	45,82	— 6,4
807	6 A	6	11 44 46,96	3,074	80 27	176 11 44,31	46,11	— 2,3
808	. . .	8	11 45 9,79	3,063	87 48	176 17 26,81	45,94	— 5,8
809	. . .	7.8	11 45 13,25	3,053	94 1	176 18 18,73	45,80	— 6,0
810	. . .	7	11 47 58,73	3,065	85 24	176 59 41,01	45,98	— 5,3
811	. . .	8	11 48 32,82	. .	. .	177 8 12,29	. .	. . .
812	7 b	5.6	11 49 42,37	3,065	85 14	177 25 35,49	45,97	— 6,4
813	8 π	5	11 50 37,18	3,067	82 16	177 39 17,74	46,02	— 5,4
814	. . .	7.8	11 53 22,07	3,056	94 22	178 20 31,05	45,85	— 4,9
815	. . .	7	11 53 32,09	3,064	85 19	178 23 1,32	45,96	— 6,3
816	. . .	7.8	11 54 28,52	3,063	85 19	178 37 7,80	45,94	— 3,8
817	9 °	4.5	11 55 1,00	3,065	80 9	178 45 14,97	45,97	— 6,6
818	. . .	7.8	11 56 57,43	3,063	79 13	179 14 21,41	45,95	— 6,0
819	. . .	7.8	11 57 0,52	3,058	95 39	179 15 7,83	45,87	— 5,5
820	. . .	8	11 57 46,32	3,060	88 16	179 26 34,72	45,90	— 4,7
821	. . .	8	11 58 59,64	3,061	71 42	179 44 54,60	45,92	— 5,1
822	10 r	6	11 59 26,47	3,059	86 59	179 51 37,10	45,89	— 5,9
823	11 s	7	11 59 51,66	3,060	83 5	179 57 54,91	45,90	— 3,9
824	. . .	7.8	12 1 26,50	3,059	84 50	180 21 37,53	45,88	— 4,5
825	12 t	6	12 3 14,55	3,055	78 37	180 48 38,17	45,83	— 7,9
826	. . .	8	12 3 43,21	3,058	86 37	180 55 48,11	45,87	— 6,1
827	. . .	7.8	12 4 1,25	3,061	94 37	181 0 18,80	45,92	— 5,2
828	. . .	8	12 7 44,12	3,058	87 19	181 56 1,81	45,87	— 4,8
829	. . .	8	12 8 15,71	3,052	80 49	182 3 55,63	45,78	— 3,4
830	13 n	6	12 8 25,31	3,059	89 40	182 6 19,68	45,89	— 2,5
831	. . .	7.8	12 8 59,31	3,040	72 20	182 14 49,61	45,60	— 4,0
832	14	6.7	12 9 3,18	3,067	97 48	182 15 47,67	46,00	— 5,7
833	15 ν	3.4	12 9 40,69	3,059	89 33	182 25 10,34	45,89	— 5,2
834	. . .	7.8	12 9 55,56	3,044	75 2	182 28 53,40	45,66	— 4,8
835	16 c	5.6	12 10 11,84	3,055	85 34	182 32 57,66	45,83	— 9,0
836	. . .	7	12 10 40,19	3,042	73 21	182 40 2,91	45,63	— 5,2
837	17	6	12 12 21,83	3,051	83 35	183 5 27,40	45,77	— 7,5
838	. . .	7.8	12 12 59,02	3,065	93 52	183 14 45,32	45,97	— 5,7
839	. . .	7.8	12 14 3,29	3,073	99 22	183 30 49,41	46,09	— 4,4
840	. . .	8	12 14 19,63	3,051	84 30	183 34 54,51	45,77	. . .
841	. . .	8	12 15 42,44	3,051	84 40	183 55 36,64	45,76	. . .
842	. . .	6.7	12 17 36,23	3,065	93 30	184 24 3,43	45,98	— 5,1
843	. . .	8	12 18 6,89	3,049	84 30	184 31 43,30	45,74	— 5,8
844	. . .	7.8	12 18 54,57	3,057	88 41	184 43 39,24	45,85	— 4,7
845	. . .	6.7	12 19 47,06	3,084	102 17	184 56 45,93	46,26	— 5,0

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Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Diff. a polo boreo.	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h ′ ″	″	° ′	° ′ ″	″	″
846	19	6	12 20 25,85	3,037	79 9	185 5 57.8	45.55	. .
847	. . .	8	12 21 5,74	3,074	8 21	185 16 26,11	46,11	. .
848	. . .	6.7	12 21 22,60	3,068	93 57	185 20 39,02	46,02	— 6,5
849	20	6	12 22 55,30	3,033	78 36	185 43 49,46	45,49	— 7,0
850	22	7.8	12 23 24,27	3,03	81 13	185 51 4,00	45,58	— 5,8
851	19 q	5.6	12 23 28,00	3,079	98 21	185 52 0,01	46,19	— 4,4
852	. . .	7.8	12 24 20,57	3,038	81 9	186 5 8,49	45,57	—10,5
853	. . .	8	12 24 56 00	3,038	81 37	186 15 59,95	45,57	. . .
854	25 f	6.7	12 26 29,81	3,071	94 44	186 37 27,10	46,08	— 7.5
855	. . .	8	12 26 40,51	3,037	80 58	186 40 7,71	45,56	. . .
856	23	7	12 26 59,97	3,032	80 6	186 44 59,54	45,48	— 7,0
857	. . .	8	12 27 28,90	. .	. .	186 52 13,44	. .	. . .
858	. . .	8	12 28 15,74	3,036	81 53	187 3 26,04	45,54	. . .
859	. . .	8	12 28 21,08	3,036	81 52	187 5 16,14	45,54	. . .
860	26 χ	5	12 28 56,08	3.080	96 53	187 14 1,22	46,20	— 8,9
861	. . .	7	12 29 12,05	3,074	95 0	187 18 0,71	46,11	— 6,7
862	27	6	12 31 29,53	3,023	78 28	187 52 22,90	45.34	—15,0
863	29 γ	3	12 31 52,21	3,061	90 21	187 53 3,14	45,91	— 8,4
864	28	7	12 31 37,78	3,080	96 24	187 54 26,64	46,20	— 4,1
865	30 ε	5	12 31 45,50	3,023	78 39	187 56 22,52	45,34	— 5,9
866	31 d¹	6	12 31 49,10	3,034	82 5	187 57 16,55	45,51	— 6,9
867	. . .	7.8	12 33 9,72	3,021	78 48	188 17 25,83	45,32	— 5,0
868	32 d²	7	12 35 30,68	3,028	81 14	188 52 40,16	45.42	— 4,2
869	33	6	12 36 12,65	3,020	79 20	189 3 9.75	45,30	— 0,2
870	. . .	8	12 36 13,57	3,020	79 24	189 3 20,51	45,30	. . .
871	. . .	6.7	12 36 52,80	3,033	82 57	189 13 11,93	45,49	— 5,3
872	. . .	7	12 36 55,61	3,021	79 50	189 13 54,22	45,31	— 3,7
873	. . .	8	12 36 58,75	3,019	79 21	189 14 40,29	45,28	. . .
874	31	6	12 37 9,36	3,009	76 57	189 17 20,35	43,14	— 2.9
875	. . .	6.7	12 37 13,82	3,079	95 12	189 18 27,34	46,18	— 3,9
876	35	6	12 37 40,51	3,042	95 20	189 25 7,73	45,63	— 4,4
877	36	6	12 38 52,60	2,998	74 47	189 43 8,99	44,97	— 6,0
878	. . .	7.8	12 39 47,28	3,085	96 32	189 56 49,21	46,28	— 5,0
779	. . .	6.7	12 40 59,57	3,098	99 15	190 14 53,50	46,47	— 5,7
880	37	6	12 41 26,25	3,043	85 51	190 21 35,74	45,64	— 6,1
881	38	6	12 42 57,23	3,070	92 28	190 44 18,44	46,05	— 6,4
882	. . .	8	12 43 9,08	3,097	98 27	190 47 16,26	46,46	. . .
883	39	7.8	12 43 13,77	3,095	97 58	190 48 26,59	46,42	— 0,5
884	41	6	12 43 47,25	2,999	76 29	190 56 48,51	44,99	— 6,5
885	40 ψ	5.6	12 43 57,88	3,097	98 27	190 59 28,15	46,46	— 6,2

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Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Dist. a polo boreo.	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h ′ ″	″	° ′	° ′ ″	″	″
886	42	7	12 45 3,85	3,018	81 0	191 15 58,40	45,27	. . .
887	. . .	7	12 45 5,93	3,075	93 25	191 16 28,97	46,13	— 4,3
888	43 δ	3.4	12 45 32,15	3,039	85 31	191 23 1,88	45,59	— 9,4
889	44 k²	6	12 49 21,89	3,073	92 44	192 20 28,31	46,10	— 4,6
890	45 k²	7	12 49 26,56	3,079	93 34	192 21 38,35	46,18	. . .
891	46	6	12 50 18,50	3,071	92 17	192 34 57,52	46,07	— 4,2
892	47 ε	3.4	12 52 13,17	2,995	77 58	193 3 17,56	44,93	— 4,9
893	48	6	12 53 36,60	3,073	92 35	193 24 9,05	46,10	— 2,4
894	49 g	5.6	12 57 25,96	3,116	99 40	194 21 29,31	46,74	— 4,1
895	50	6	12 59 18,06	3,115	99 16	194 49 30,96	46,72	— 2,8
896	51 9	4.5	12 59 40,26	3,086	94 28	194 54 3,94	46,29	— 5,9
897	. .	6.7	12 59 57,55	2,948	72 5	194 59 23,30	44,22	— 4,6
898	52	7	13 0 23,19	3,115	99 2	195 5 47,78	46,72	+ 2,0
899	53	5	13 1 26,10	3,155	74 53	195 21 31,47	47,33	— 6,0
900	. . .	6.7	13 2 35,84	2,981	77 23	195 38 57,60	44,72	— 5,1
901	54	6	13 2 46,75	3,175	107 45	195 41 41,28	47,62	— 5,3
902	55	6	13 2 30,29	3,184	108 53	195 52 34,29	47,76	— 7,3
903	. . .	7	13 3 46,55	3,044	87 29	195 56 38,21	45,66	— 6,0
904	56	7.8	13 4 17,00	3,120	99 18	196 4 15,07	46,80	— 3,1
905	57	6	13 5 11,23	3,188	108 52	196 17 48,49	47,82	— 5,0
906	. . .	7.8	13 5 23,68	3,033	85 53	196 20 55,20	45,49	— 6,3
907	59 e	6	13 5 51,21	2,988	79 32	196 42 48,13	44,82	— 6,1
908	58	7	13 6 59,22	3,124	99 29	196 44 48,31	46,86	— 1,4
909	. . .	6	13 7 21,95	2,958	75 16	196 50 29,20	44,37	— 4,3
910	60 σ	6	13 7 30,34	3,015	83 28	196 52 35,17	45,23	— 5,2
911	. . .	8	13 7 46,02	2,957	75 11	196 56 30,36	44,35	— 8,4
912	62	7	13 9 50,72	3,132	100 15	197 27 40,80	46,98	— 5,3
913	. . .	8	13 11 34,81	3,143	101 32	197 53 42,22	47,14	— 6,2
914	64	6	13 12 4,95	3,015	83 47	198 1 14,18	45,22	— 5,8
915	63	6	13 12 19,73	3,185	106 41	198 4 56,00	47,75	— 5,2
916	65	6	13 12 57,90	3,087	93 52	198 14 28,44	46,31	— 7,4
917	66	6	13 14 9,23	3,090	94 7	198 32 18,45	46,35	— 7,6
918	67 ϰ	1	13 14 40,41	3,147	100 7	198 40 6,15	47,21	— 5,3
919	. . .	7.8	13 15 24,36	3,181	105 49	198 51 5,41	47,72	— 6,6
920	68 i	5	13 16 10,28	3,149	101 40	199 2 34,25	47,24	— 3,9
921	. . .	8	13 16 40,15	. . .	. . .	199 10 2,24	. . .	. . .
922	69	6	13 16 48,40	3,174	104 56	199 12 6,00	47,61	— 5,3
923	70	5.6	13 18 38,97	2,940	75 9	199 39 44,60	44,10	— 6,4
924	. . .	7.8	13 18 42,29	3,203	107 41	199 40 34,41	48,04	— 6,1
925	. . .	7	13 18 59,60	3,062	90 19	199 44 53,93	45,93	— 5,3

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Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Pracc. annua +	Dist. a polo boreo.	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h ′ ″	″	° ′	° ′ ″	″	″
926	71	6	13 19 18,59	2,964	78 8	199 49 38,80	44,46	— 5,1
927	72 l²	7	13 20 0,42	3,102	95 26	200 0 6,34	46,54	— 2,4
928	. . .	7.8	13 20 32,91	3 076	92 1	200 8 13,71	46,14	— 6,2
929	73	6	13 21 17,04	3,207	107 41	200 19 15,64	48,11	— 7,5
930	74 l²	6	13 21 34,81	3,100	95 13	200 23 42,09	46,51	— 6,1
931	75	6	13 22 11,76	3,179	104 20	200 32 56,33	47,69	— 4,4
932	76 h	5.6	13 22 26,79	3,134	99 8	200 36 41,81	47,01	— 1,3
933	77	7	13 22 58,45	3,113	96 35	200 44 36,71	46,70	— 5,0
934	. . .	7.8	13 23 5,34	3,002	83 7	200 46 20,10	45,03	— 4,5
935	78	6	13 24 0,31	3,020	85 18	201 0 4,65	45,30	— 9,1
936	. . .	6.7	13 24 3,52	3,162	102 11	201 0 52,81	47,43	— 6,6
937	79 ζ	4	13 24 30,73	3,055	89 34	201 7 41,01	45,83	— 6,5
938	. . .	8	13 24 40,04	3 011	84 18	201 10 0,58	45,17	. . .
939	80 l³	6	13 25 7,86	3,096	94 22	201 16 5,84	46,44	— 7,7
940	. . .	8	13 25 54,06	2,978	80 41	201 28 30,91	44,68	— 8,0
941	81	6	13 27 7,26	3,117	96 51	201 46 48,97	46,76	— 1,8
942	. . .	7.8	13 27 27,22	3,078	92 15	201 51 48,30	46,17	— 5,7
943	. . .	8	13 28 38,00	3,186	104 11	202 9 29,93	47,79	— 6,2
944	82 m	5.6	13 31 7,72	3,129	97 41	202 46 55,82	46,94	— 5,9
945	84 o	6	13 33 1,03	3,016	85 27	203 15 15,52	45,25	— 7,6
946	. . .	7.8	13 33 30,51	3,100	94 29	203 22 37,01	46,50	— 6,1
947	83	6	13 33 43,72	3,202	105 10	203 25 55,82	48,04	—10,2
948	. . .	7	13 34 2,64	3,183	103 12	203 30 39,53	47,75	— 5,8
949	85	6	13 34 50,24	3,200	104 45	203 42 33,53	48,00	— 8,9
950	86	6	13 35 17,76	3,168	101 25	203 49 26,41	47,52	— 0,2
951	87	6	13 36 33,94	3,224	106 51	204 8 29,04	48,36	— 4,4
952	. . .	7	13 37 3,01	2,988	82 38	204 15 45,22	44,82	— 5,0
953	88	6.7	13 37 51,04	3,114	95 50	204 27 45,55	46,72	— 5,1
954	. . .	6.7	13 38 19,58	3,076	91 50	204 34 53,70	46,15	— 4,5
955	89	5.6	13 39 1,55	3,229	107 8	204 45 23,27	48,44	— 5,3
956	. . .	7.8	13 39 29,13	2,986	82 39	204 52 16,90	44,80	— 6,1
957	. . .	8	13 40 3,32	3,124	96 36	205 0 49,81	46,86	— 4,8
958	. . .	7.8	13 40 21,03	3,126	96 47	205 5 15,51	46,89	— 3,5
959	. . .	8	13 42 55,54	2,874	72 17	205 43 53,10	43,11	— 5,1
960	91	7	13 43 28,55	3,228	106 11	205 52 8,27	48,42	. . .
961	90 p	6	13 44 26,55	3,064	90 31	206 6 38,23	45,96	— 3,9
962	. . .	7	13 44 30,01	3,132	97 4	206 7 30,20	46,98	— 5,2
963	. . .	8	13 46 14,99	. . .	. . .	206 33 44,84	. . .	. . .
964	92	7.8	13 46 17,11	3,038	87 58	206 34 16,00	45,57	— 3,1
965	. . .	7	13 49 28,20	3,086	92 34	207 22 2,93	46,30	— 4,4

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Num. Catal. ZACH.	Num. Catalog. FLAMST.	Ordo mgn.	Aſcenſio recta media in temp. ad init. anni 1800.	Praec. annua +	Diſt. a polo boreo	Aſcenſio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum PIAZZI.
			h ′ ″	″	° ′	° ′ ″	″	″
966	. . .	6.7	13 49 32,95	3,136	97 11	207 23 14,31	47 04	— 3,8
967	93 τ	4.5	13 51 28,66	3,031	87 29	207 52 9,96	45,47	— 5,5
968	. . .	7	13 53 38,55	3,216	104 0	208 24 37,92	48,2	— 3,4
969	. . .	7	13 53 46,99	3,152	98 17	208 26 44,80	47,28	— 4 3
970	94	6	13 55 43,33	3,149	97 56	208 55 49,92	47,24	— 1,3
971	95	6	13 56 9,18	3,154	98 21	209 2 17,75	47,31	— 4,3
972	. . .	7.8	13 56 21,87	3,234	105 14	209 5 28,11	48,51	— 3,7
973	. . .	7.8	13 57 47,17	3,184	100 52	209 26 47,50	47,77	— 4,0
974	96	6	13 58 22,19	3,168	99 23	209 35 32,77	47,53	— 6,6
975	. . .	8	13 59 39,29	2,927	78 48	209 54 49,40	43,91	— 4,4
976	seq.	8	13 59 51,24	2,926	78 47	209 57 48,61	43,90	— 5,1
97	. . .	6	13 59 56,02	3,241	105 21	209 59 0,33	48,62	— 4,8
97	. . .	7.8	14 1 24,37	3,120	95 11	210 21 5,51	46,80	— 3,7
979	97	6	14 1 55,09	3,164	98 57	210 28 46,36	47,48	— 6,4
980	98 ×	4	14 2 14,52	3,170	99 20	210 33 37,86	47,56	— 1,9
981	. . .	6.7	14 3 57,13	3,119	95 1	210 59 16,90	46,79	— 4,0
982	. . .	6	14 4 23,89	3,273	107 16	211 5 58,41	49,10	— 3,4
983	99	4	14 5 32,46	3,120	95 2	211 25 6,92	46,81	— 4,1
984	101	8	14 7 54,89	2,850	72 46	211 58 43,39	42,75	. . .
985	100 λ	4	14 8 18,32	3,215	102 26	212 4 34,74	48,23	— 4,0
986	102 ν^1	6	14 9 14,97	3,075	91 20	212 18 44,55	46,13	— 4,6
987	. . .	7.8	14 9 23,55	3,131	95 49	212 20 53,31	46,98	— 5,3
988	103 ν^2	6	14 11 40,88	3,072	91 4	212 55 13,16	46,08	— 6,0
989	. . .	8	14 14 16,75	3,076	91 19	213 34 10,94	46,14	. . .
990	. . .	7.8	14 14 29,29	3,220	102 26	213 37 19,30	48,31	— 7,3
991	104	6.7	14 16 55,43	3,127	95 13	214 13 51,55	46,91	— 3,6
992	. . .	8	14 16 55,98	3,224	102 27	214 13 59,72	48,37	— 4,2
993	. . .	7.8	14 17 51,88	3,180	99 6	214 27 58,21	47,70	— 5,0
994	105 φ	4.5	14 17 54,60	3,076	91 19	214 28 39,00	46,14	— 2,0
995	106	6	14 18 9,92	3,158	96 0	214 32 28,76	47,07	— 8,4
996	. . .	8	14 19 35,08	3,140	96 1	214 53 46,14	47,10	. . .
997	. . .	7.8	14 19 36,39	3,103	93 21	214 54 5,80	46,55	— 5,1
998	. . .	8	14 23 29,80	2,960	82 49	215 52 27,03	44,41	— 3,3
999	. . .	8	14 26 44,01	3,101	93 1	216 41 0,21	46,52	— 3,8
1000	. . .	8	14 27 23,93	3,119	94 40	216 50 58,99	46,79	— 2,8
1001	. . .	7.8	14 28 16,35	3,196	99 41	217 4 5,30	47,94	— 4,1
1002	107 μ	4.5	14 32 32,31	3,123	94 47	218 8 4,64	46,85	— 8,5
1003	108	6.7	14 35 19,57	3,037	88 26	218 49 53,60	45,56	— 2,3
1004	109	4	14 36 8,99	3,020	87 15	219 2 14,85	45,30	— 7,4
1005	110	5	14 32 48,52	3,013	87 7	223 12 7,83	45,20	— 5,9

L I B R A.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Aſcenſio recta media in temp. ad init. anni 1800.	Praec. annua +	Diſt. a polo boreo	Aſcenſio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h ′ ″	″	° ′	° ′ ″	″	″
1006	. . .	7.8	14 12 4,77	3,147	96 50	213 1 11,53	47,20	— 4,8
1007	2	7	14 12 41,20	3,199	100 47	213 10 18,01	47,98	— 6,0
1008	. . .	7.8	14 13 56,94	3,199	100 45	213 29 14,05	47,99	— 2,1
1009	. . .	6.7	14 26 22,66	3,219	101 27	216 35 39,93	48,29	— 3,9
1010	. . .	7.8	14 27 22,79	3,015	86 51	216 50 41,81	45,23	— 5,1
1011	3	6.7	14 27 50,99	3,419	114 9	216 57 44,89	51,29	+ 2,8
1012	. . .	8	14 31 12,26	3,223	101 22	217 48 3,84	48,35	— 3,1
1013	. . .	8	14 31 32,46	3,223	101 17	217 53 6,91	48,34	— 4,4
1014	4	7	14 31 41,51	3,427	114 8	217 55 22,95	51,40	— 0,5
1015	. . .	7	14 34 51,73	3,369	110 19	218 42 55,92	50,53	— 2,7
1016	5	6	14 34 57,38	3,277	104 36	218 44 20,63	49,15	— 3,8
1017	. . .	7	14 35 53,05	3,373	110 29	218 58 15,42	50,60	— 4,2
1018	7 μ	5.6	14 38 22,57	3,260	105 18	219 35 38,54	48,90	— 3,4
1019	6	5	14 38 34 39	3,495	117 7	219 38 35,86	52,43	+ 9,8
1020	8 α^1	6	14 39 38,89	3,296	105 9	219 54 43,32	49,44	— 3,1
1021	9 α^2	2	14 39 50,21	3,297	105 12	219 57 33,12	49,46	— 4,1
1022	. . .	6	14 40 25,02	3,321	106 57	220 6 15,31	49,81	— 3,3
1023	10	7	14 40 39,48	3,331	107 31	220 9 52,25	49,96	— 5,7
1024	11	6	14 40 39,55	3,081	91 27	220 9 53,19	46,22	— 2,2
1025	12	6	14 42 44,85	3,443	113 49	220 41 12,71	51,65	— 2,1
1026	13 ξ^1	5.6	14 43 32,44	3,229	101 4	220 53 6,58	48,44	— 0,3
1027	. . .	6	14 45 48,87	3,389	110 30	221 27 13,10	50,84	— 1,1
1028	14	7	14 45 51,78	3,461	114 37	221 27 56,65	51,91	+ 1,8
1029	15 ξ^2	5	14 45 56,01	3,224	100 36	221 29 0,21	48,36	— 7,1
1030	16	5.6	14 46 45,18	3,114	93 31	221 41 17,66	46,71	— 0,9
1031	17	6	14 47 24,30	3,222	100 20	221 51 4,51	48,33	— 3,6
1032	18	7	14 48 5,71	3,222	100 20	222 1 25,60	48,33	— 4,9
1033	19 δ	4.5	14 50 18,20	3,181	97 43	222 34 32,96	47,72	+ 0,6
1034	. . .	6.7	14 50 57,25	3,091	91 57	222 44 18,71	46,36	— 2,1
1035	. . .	7	14 51 30,86	3,168	96 47	222 52 42,94	47,52	— 3,3
1036	. . .	7.8	14 52 22,50	3,095	92 14	223 5 37,43	46,43	— 3,7
1037	20 γ m	3.4	14 52 23,68	3,475	114 29	223 5 55,24	52,12	— 4,2
1038	. . .	7	14 54 37,21	3,441	112 32	223 39 18,11	51,62	— 1,5
1039	21 $,^1$	6	14 55 29,53	3,316	105 28	223 52 22,95	49,74	— 3,8
1040	22 $,^2$	6.7	14 55 40,46	3,319	105 42	223 55 6,94	49,79	— 2,0
1041	23	8	14 56 9,01	3,483	114 33	224 2 15,17	52,24	. . .
1042	. . .	8	14 56 19,66	. . .	. . .	224 4 54,94	. . .	. . .
1043	. . .	8	14 57 14,28	3,245	101 16	224 18 34,13	48,68	— 4,1
1044	. . .	8	14 58 2,08	3,279	103 13	224 30 31,81	49,18	— 3,0
1045	. . .	6	14 58 15,07	3,460	113 13	224 33 16,04	51,91	— 4,8

L I B R A.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Dist. a polo boreo.	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h ′ ″	″	° ′	° ′ ″	″	″
1046	24 ι^1	5	15 0 50,63	3,386	109 1	225 12 39,47	50,79	— 2,6
1047	25 ι^2	6	15 1 57,08	3,385	108 53	225 29 16,19	50,78	— 3,3
1048	. . .	7.8	15 2 24,07	3,252	100 15	225 36 1,10	48,48	— 2,0
1049	26	6	15 3 17,81	3,353	107 1	225 49 27,10	50,30	+ 1,4
1050	27 β	2.3	15 6 15,78	3,207	98 38	226 33 56,69	48,10	— 4,2
1051	. . .	8	15 8 36,23	3,204	98 24	227 9 3,43	48,06	— 4,0
1052	28	6	15 9 34,66	3,367	107 25	227 23 39,86	50,51	— 5,3
1053	29 o^1	6.7	15 9 51,80	3,319	104 49	227 27 56,94	49,78	— 2,6
1054	30 o^2	6	15 11 53,67	3,313	104 24	227 58 25,09	49,70	— 0,6
1055	. . .	7	15 12 54,92	3,265	101 39	228 13 43,81	48,97	— 3,3
1056	31 ε	4.5	15 13 22,42	3,227	99 36	228 20 36,32	48,40	+ 2,2
1057	. . .	8	15 14 29,10	3,157	95 32	228 37 16,50	47,35	— 1,5
1058	32 ζ^1	6	15 16 59,85	3,351	106 0	229 14 57,79	50,24	— 2,6
1059	. . .	7.8	15 18 17,26	3,365	106 44	229 34 18,88	50,47	— 3,2
1060	33 ζ^2	7	15 18 53,40	3,361	106 34	229 43 21,07	50,42	. . .
1061	34 ζ^3	6	15 19 24,78	3,350	105 55	229 51 11,68	50,25	— 3,2
1062	. . .	7.8	15 20 14,45	3,421	109 28	230 3 56,70	51,32	— 2,8
1063	. . .	6.7	15 21 8,58	3,412	108 59	230 17 8,63	51,18	— 1,9
1064	35 ζ^4	6	15 21 38,46	3,357	106 10	230 24 36,94	50,36	+ 0,6
1065	36	5	15 22 31,67	3,592	117 22	230 37 55,01	53,88	— 2,8
1066	37	4	15 23 15,78	3,231	99 22	230 48 56,64	48,47	— 6,0
1067	38 γ	4	15 24 21,50	3,320	104 7	231 5 22,43	49,80	— 2,4
1068	39	5.6	15 24 54,85	3,600	117 28	231 13 42,70	54,00	— 5,2
1069	40	4.5	15 26 24,08	3,642	119 6	231 36 1,16	54,63	+ 1,8
1070	. . .	8	15 27 21,10	3,317	105 51	231 50 16,43	49,76	— 2,0
1071	41	6	15 27 25 01	3,413	108 58	231 51 15,12	51,20	— 6,7
1072	42	5.6	15 28 29,00	3,511	113 9	232 7 14,98	52,66	— 0,9
1073	43 κ	5	15 30 26,80	3,425	109 1	232 36 41,93	51,37	— 3,5
1074	. . .	7.8	15 31 32,67	3,351	105 22	232 53 10,10	50,27	— 4,1
1075	44 η	4.5	15 32 50,38	3,345	105 1	233 12 35,68	50,18	— 0,6
1076	. . .	8	15 37 18,81	. . .	. . .	234 19 42,17	. . .	. . .
1077	. . .	8	15 38 37,09	. . .	. . .	234 39 16,33	. . .	. . .
1078	45 λ	5	15 41 44,53	3,449	109 33	235 26 8,01	51,74	— 4,7
1079	46 ϑ	5	15 42 27,34	3,377	106 8	235 36 50,04	50,66	— 3,6
1080	47	7	15 43 27,97	3,435	108 47	235 51 59,55	51,53	— 3,4
1081	48 ψ	5	15 47 0,34	3,330	103 41	236 45 5,16	49,95	— 2,2
1082	49	5.6	15 49 7,39	3,378	103 56	237 16 50,87	50,68	— 3,9
1083	50	6	15 50 0,56	3,213	97 50	237 30 8,37	48,20	— 5,4
1084	51 ξ^3	4.5	15 53 23,13	3,276	100 49	238 20 46,97	49,14	— 4,3

SCORPIO.

Num. Catal. ZACH.	Num. Catalog. FLAMST.	Ordo mgn.	Ascenſio recta media in temp. ad init. anni 1800.	Praec. annua +	Diſt. a polo boreo.	Ascenſio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum PIAZZI.
			h ′ ″	″	° ′	° ′ ″	″	″
1085	. . .	6.7	15 25 30,19	3,559	115 36	231 22 32,80	53,38	— 4,1
1086	1 b	5	15 38 58,52	3,571	115 8	234 44 37,75	53,56	— 2,7
1087	2 A^1	5	15 41 37,71	3,565	114 43	235 24 25,65	53,48	— 6,7
1088	. . .	6	15 41 59,01	3,547	113 55	235 29 45,11	53,21	— 5,2
1089	. . .	6	15 42 3,32	3,535	113 22	235 30 49,83	53,03	— 4,8
1090	3 A^2	6	15 42 40,59	3,565	114 38	235 40 8,84	53,48	— 3,1
1091	4	6	15 43 26,31	3,590	115 40	235 51 34,70	53,85	— 4,4
1092	5 ζ	4.5	15 44 33,63	3,663	118 37	236 8 24,46	54,94	— 2,9
1093	. . .	7.8	15 45 56,84	3,530	112 56	236 29 12,63	52,95	— 3,2
1094	6 π	3.4	15 46 46,61	3,591	115 31	236 41 39,19	53,87	— 2,9
1095	7 δ	3	15 48 31,77	3,512	112 2	237 7 56,51	52,70	— 3,1
1096	. . .	6	15 51 17,09	3,593	115 18	237 49 16,33	53,90	— 4,3
1097	8 β d	2	15 53 49,63	3,457	109 15	238 27 24,04	51,86	— 0,8
1098	. . d	6	15 53 50,33	3,457	109 15	238 27 35,01	51,86	— 3,0
1099	9 ω^1	4.5	15 55 7,59	3,478	110 7	238 46 53,80	52,17	— 0,7
1100	10 ω^2	4.5	15 55 41,80	3,482	110 19	238 55 27,03	52,23	— 4,0
1101	. . .	5.6	15 55 57,51	3,611	115 47	238 59 22,61	54,17	— 2,4
1102	11	6	15 56 31,02	3,307	102 12	239 7 45,32	49,60	— 7,3
1103	12 c^1	6	15 59 55,96	3,671	117 53	239 58 59,45	55,06	+ 0,5
1104	13 c^2	4.5	16 0 0,54	3,658	117 24	240 8 8,18	54,87	— 2,5
1105	. . d	7.8	16 0 22,46	3,456	108 55	240 5 36,93	51,83	— 3,0
1106	14 η d	4	16 0 23,40	3,456	108 55	240 5 50,98	51,83	— 2,9
1107	15 χ	5	16 1 4,86	3,253	99 32	240 16 12,86	48,80	— 4,4
1108	16	6	16 1 17,78	3,222	98 1	240 19 26,66	48,33	— 6,3
1109	17	6	16 2 47,97	3,291	101 19	240 41 59,62	49,36	— 0,9
1110	18	5	16 4 45,82	3,220	97 50	241 11 27,29	48,30	— 5,6
1111	. . .	5.6	16 5 55,35	3,685	118 6	241 28 50,32	55,27	— 3,1
1112	19 o	5.6	16 8 37,44	3,577	113 40	242 9 21,56	53,65	— 5,4
1113	20 σ	4	16 9 3,31	3,612	115 6	242 15 49,61	54,18	— 2,6
1114	. . .	8	16 10 55,77	. . .	. . .	242 43 56,50	. . .	. . .
1115	g d	5	16 13 36,59	3,566	112 58	243 24 8,91	53,48	— 3,1
1116	. . d	6.7	16 13 37,08	3,566	112 56	243 24 16,22	53,48	— 2,7
1117	21 κ	1	16 17 10,11	3,658	115 58	244 17 31,60	54,87	— 7,2
1118	22 i	6	16 18 4,49	3,612	114 40	244 31 7,34	54,18	— 7,3
1119	. . .	7	16 19 7,62	3,651	116 5	244 46 54,31	54,76	— 4,8
1120	23 τ	3.4	16 23 27,17	3,702	117 47	245 51 47,54	55,52	— 2,5
1121	. . .	7.8	16 26 53,45	3,452	107 48	246 43 21,80	51,78	— 4,6
1122	. . .	7	16 28 48,00	3,507	110 0	247 11 59,93	52,61	— 3,3
1123	. . .	7.8	16 29 43,00	3,451	107 39	247 25 45,02	51,77	— 1,8
1124	24 m	5	16 30 1,28	3,445	107 21	247 30 19,14	51,67	— 4,2

SCORPIO.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Dist. a polo boreo.	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h ′ ″	″	° ′	° ′ ″	″	″
1125	. .	6.7	16 30 9,25	3,498	109 52	247 32 18,81	52,47	— 3,9
1126	. .	7	16 31 49,25	3,578	112 54	247 57 18,73	53,66	— 2,5
1127	. .	6.7	16 32 30,72	3,720	118 7	248 7 40,74	55,81	— 4,6
1128	25	6	16 34 37,61	3,645	115 9	248 39 24,20	54,67	— 1,5
1129	. .	7.8	16 36 5,40	3,620	114 9	249 1 20,93	54,29	— 3,7
1130	26 ε	3	16 37 14,05	3,899	123 55	249 18 30,70	58,48	— 7,0
1131	. .	8	16 37 49,78	. . .	. .	249 27 26,68	. . .	. .
1132	μ^1	4	16 38 20,61	4,027	127 41	249 35 9,15	60,39	— 0,5
1133	μ^2	3.4	16 38 48,82	4,027	127 40	249 42 12,36	60,39	— 3,1
1134	. .	8	16 39 28,87	. . .	. .	249 52 12,98	. . .	. .
1135	. .	8	16 39 34,80	. . .	. .	249 53 41,98	. . .	. .
1136	. .	6.7	16 41 37,44	3,519	110 4	250 24 21,60	52,78	— 4,2
1137	. .	7	16 41 51,38	3,794	120 15	250 27 50,63	56,90	— 3,6
1138	27	6	16 44 9,74	3,877	122 56	251 2 26,16	58,15	+ 3,7
1139	. .	7	16 45 19,49	3,501	109 13	251 19 52,33	52,51	— 5,1
1140	. .	8	16 48 35,15	. . .	. .	252 8 47,27	. . .	. .
1141	. .	6	16 48 57,99	3,850	121 50	252 14 29,91	57,74	— 4,4
1142	k	5	16 51 41,02	3,914	123 50	252 55 15,31	58,70	— 3,0
1143	. .	7	16 52 54,76	3,532	110 12	253 13 41,43	52,97	— 2,7
1144	28	6	16 54 16,20	3,558	111 16	253 34 2,94	53,37	+ 0,7
1145	. .	8	16 59 44,92	. . .	. .	254 56 13,84	. . .	. .
1146	. .	8	17 0 9,72	3,711	116 44	255 2 25,80	55,66	. .
1147	29	6	17 1 47,49	3,711	116 44	255 26 52,33	55,66	+ 1,7
1148	. .	5.6	17 2 12,18	3,911	123 18	255 33 2,72	58,65	— 3,5
1149	a Oph.	4.5	17 3 4,02	3,701	116 18	255 46 0,33	55,50	— 5,7
1150	30	6	17 3 56,71	3,699	116 14	255 59 10,70	55,48	— 4,4
1151	. .	5.6	17 4 3,91	3,883	122 25	256 0 58,71	58,24	— 2,9
1152	31	6.7	17 5 14,67	3,705	116 24	256 18 40,03	55,56	— 2,9
1153	32	6	17 9 26,20	2,660	114 41	257 21 33,06	54,89	— 0,1
1154	s Oph.	3	17 9 44,26	3,662	114 47	257 26 3,84	54,93	— 3,4
1155	Oph.	8	17 10 52,53	3,665	114 53	257 43 7,90	54,96	+ 1,8
1156	. .	7.8	17 10 59,60	3,472	107 30	257 44 54,00	52,07	— 3,4
1157	. .	6	17 12 44,66	3,569	111 14	258 11 9,83	55,53	— 2,3
1158	33	6	17 12 53,35	3,642	114 3	258 13 20,29	54,63	— 1,1
1159	b Oph.	4.5	17 14 10,13	3,641	113 58	258 32 31,93	54,61	— 4,0
1160	. .	8	17 14 33,13	4,313	133 47	258 38 16,90	64,69	. .
1161	34 υ	3.4	17 17 10,73	4,053	127 7	259 17 40,97	60,79	— 1,0
1162	35 λ	3	17 20 2,42	4,049	126 56	260 0 36,27	60,73	— 8,4
1163	. .	5	17 22 47,19	4,108	128 29	260 41 47,81	61,60	— 5,1
1164	x	3	17 28 39,98	4,127	128 55	262 9 59,63	61,90	— 4,1

SAGITTARIVS.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Dist. a polo boreo.	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h ′ ″	″	° ′	° ′ ″	″	″
1165	1	6.7	17 19 19,80	3,702	116 6	259 49 56,93	55,55	— 2,9
1166	52 Oph.	6.7	17 23 17,01	3,588	111 54	260 49 15,14	53,83	— 0,7
1167	. . .	8	17 25 36,49	. . .	. . .	261 24 7,37	. . .	. . .
1168	2	6	17 26 44,13	3,587	111 47	261 41 1,94	53,81	— 3,3
1169	. . .	7.8	17 26 59,45	3,887	122 4	261 44 51,80	58,30	— 4,1
1170	. . .	7	17 30 42,68	3,754	117 46	262 40 40,20	56,32	— 9,5
1171	58 Oph.	5	17 31 27,06	3,582	111 54	262 51 45,84	53,73	— 0,9
1172	. . .	7.8	17 33 31,82	3,730	116 52	263 22 57,31	55,95	— 5,3
1173	3 p	4.5	17 34 58,73	3,754	117 54	263 44 40,88	56,31	— 8,5
1174	. . .	7	17 35 57,92	3,731	116 53	263 59 28,74	55,97	— 4,1
1175	. . .	5.6	17 36 11,66	3,875	121 37	264 2 54,84	58,13	— 6,2
1176	. . .	7	17 38 20,66	3,840	120 29	264 35 9,91	57,60	— 3,9
1177	. . .	7.8	17 38 59,97	3,618	112 51	264 44 59,52	54,27	— 7,0
1178	. . .	6.7	17 39 34,14	3,956	124 3	264 53 32,13	59,35	— 4,1
1179	. . .	7	17 39 59,15	3,528	109 27	264 59 47,21	52,93	— 1,3
1180	. . .	7.8	17 40 32,40	3,518	109 3	265 8 5,93	52,77	— 3,4
1181	63 Oph.	6.7	17 42 35,03	3,674	114 50	265 38 54,46	55,11	— 1,3
1182	. . .	8	17 44 4,28	. . .	. . .	266 1 4,22	. . .	. . .
1183	. . .	7	17 44 9,27	3,511	108 45	266 2 19,00	52,67	— 2,7
1184	. . .	7.8	17 44 18,95	3,594	111 54	266 4 44,22	53,91	— 0,9
1185	. . .	8	17 45 57,78	. . .	. . .	266 29 26,68	. . .	. . .
1186	. . .	5	17 46 15,00	3,834	120 13	266 33 44,93	57,51	— 2,0
1187	4 b^1	5	17 47 35,19	3,644	113 47	266 53 47,84	54,67	— 6,4
1188	5 i	7	17 47 56,03	3,658	114 15	266 59 0,49	54,88	+ 2,5
1189	. . .	7	17 48 6,23	3,551	110 19	267 1 35,42	53,28	— 1,7
1190	6	8	17 49 46,24	3,470	107 8	267 26 35,57	52,05	— 5,7
1191	. . .	6	17 49 47,64	3,618	112 46	267 26 54,61	54,27	— 4,4
1192	. . .	7	17 50 24,49	3,622	112 53	267 36 7,32	54,33	— 7,3
1193	7 a	5	17 50 36,00	3,659	114 16	267 38 59,95	54,89	— 9,1
1194	. . .	7.8	17 50 55,30	3,616	112 42	267 43 49,54	54,24	— 4,5
1195	11	8	17 51 28,80	3,627	113 7	267 52 12,03	54,41	0,0
1196	9	7	17 51 36,86	3,661	114 21	267 54 12,94	54,92	— 3,0
1197	. . .	7	17 51 41,77	3,660	114 18	267 55 26,48	54,90	— 9,5
1198	. . .	8	17 52 11,90	3,529	109 27	268 2 58,46	52,94	— 0,2
1199	. . .	5	17 52 14,75	3,816	119 34	268 3 41,02	57,24	— 3,8
1200	. . .	6.7	17 52 54,93	3,662	114 24	268 13 43,92	54,94	— 9,9
1201	10 γ	4	17 52 57,86	3,842	120 25	268 14 27,94	57,63	+ 3,6
1202	. . .	5	17 55 24,88	3,780	118 28	268 51 13,14	56,71	+ 0,1
1203	. . .	7	17 56 38,66	3,584	111 28	269 9 39,95	53,76	— 2,4
1204	. . .	6	17 57 12,05	3,852	120 45	269 18 0,78	57,79	— 3,8

SAGITTARIVS.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. adinit. anni 1800.	Praec. annua +	Diſt. à polo boreo.	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Diff. cum Piazzi.
			H ′ ″	″	° ′	° ′ ″	″	″
1205	. . .	5.6	17 59 31,24	3,644	113 44	269 52 48,65	54,67	— 7,2
1206	13 μ^1	3.4	18 1 48,25	3,572	111 6	270 27 3,74	53,59	— 3,4
1207	14	6	18 2 15,13	3,591	111 45	270 33 46,96	53,87	+ 5,7
1208	. . .	8	18 2 52,75	3,655	114 2	270 43 11,17	54,82	+ 6,5
1209	15 μ^2	6	18 3 17,08	3,564	110 46	270 49 16,21	53,48	— 3,6
1210	16	6	18 3 18,88	3,555	110 26	270 49 43,18	53,34	— 0,3
1211	17	7	18 4 40,74	3,560	110 36	271 10 11,12	53,40	0,0
1212	. . .	6	18 5 31,82	3,742	117 6	271 22 57,35	56,13	+ 2,3
1213	19 δ	3.4	18 8 11,29	3,826	119 54	272 2 49,34	57,39	— 0,4
1214	18	7.8	18 8 21,72	3,860	121 1	272 5 25,74	57,91	+ 0,7
1215	. . .	8	18 9 19,85	4,055	126 45	272 19 57,81	60,82	— 1,3
1216	20 ε	3	18 10 53,76	3,973	124 28	272 45 26,43	59,60	— 3,0
1217	. . .	6	18 12 10,31	3,854	120 51	273 2 34,62	57,82	— 2,4
1218	21	5.6	18 13 26,37	3,569	110 38	273 21 35,58	53,54	— 2,6
1219	22 λ	3.4	18 15 37,59	3,690	115 31	273 54 23,81	55,42	— 3,2
1220	. . .	6	18 16 16,11	3,487	107 50	274 4 1,63	52,31	. . .
1221	. . .	7.8	18 17 1,45	3,696	115 22	274 15 21,70	55,45	— 4,0
1222	. . .	6	18 17 57,51	3,926	123 6	274 29 22,71	58,90	— 1,7
1223	23	8	18 18 10,36	3,656	114 11	274 32 35,46	54,85	— 3,1
1224	. . .	6	18 18 26,46	3,513	108 51	274 36 36,91	52,70	— 3,1
1225	. . .	6.7	18 19 35,07	3,519	109 1	274 53 46,11	52,79	— 2,9
1226	. . .	6	18 19 42,84	3,504	108 32	274 55 42,54	52,57	— 1,0
1227	. . .	7.8	18 20 42,85	3,519	109 6	275 10 42,80	52,79	— 3,4
1228	. .	6	18 20 50,50	3,927	123 9	275 12 37,53	58,91	— 4,1
1229	24	7	18 21 0,51	3,657	114 14	275 15 7,65	54,86	+ 4,6
1230	. . .	7	18 21 26,84	3,504	108 30	275 21 42,61	52,56	— 1,3
1231	. . .	6.7	18 21 40,11	3,655	114 10	275 25 1,60	54,83	+ 5,5
1232	25	7	18 22 18,41	3,660	114 22	275 34 36,11	54,91	+ 7,1
1233	. . .	7	18 23 35,38	3,526	109 25	273 53 50,72	52,99	— 1,3
1234	. . .	7	18 25 19,85	3,524	109 22	276 19 57,71	52,87	— 4,4
1235	. . .	8	18 25 53,80	3,829	120 8	276 28 26,96	57,43	. . .
1236	. . .	6.7	18 25 56,04	3,582	111 33	276 29 0,53	53,74	— 3,2
1237	. . .	8	18 26 18,72	3,572	111 9	276 34 40,79	53,58	. . .
1238	. . .	6	18 26 20,69	3,640	113 40	276 35 10,52	54,60	+ 3,8
1239	. . .	6.7	18 26 57,73	3,562	111 12	276 44 25,99	53,44	— 1,7
1240	26	6	18 29 39,39	3,609	114 0	277 24 50,80	54,14	— 5,0
1241	. . .	8	18 30 44,94	3,651	114 7	277 41 14,04	54,77	. . .
1242	t	6	18 30 55,25	4,014	125 49	277 43 48,73	60,21	— 3,1
1243	. . .	6	18 32 31,34	3,682	115 12	278 7 50,08	55,24	+ 2,8
1244	27 φ	4	18 33 9,19	3,737	117 11	278 17 17,90	56,06	— 2,8

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			h ′ ″	″	° ′	° ′ ″	″	″
1245	. . .	7	18 34 12,41	3,534	109 48	278 33 6,11	53,01	— 1,3
1246	28	6	18 34 16,65	3,608	112 35	278 34 9,82	54,12	+ 2,8
1247	. . .	7.8	18 36 0,02	3,551	110 29	279 0 0,33	53,27	— 2,3
1248	29	6	18 37 47,79	3,552	110 32	279 26 56,78	53,29	— 5,1
1249	30	6	18 38 48,86	3,601	112 23	279 42 12,95	54,02	+ 0,1
1250	31	6	18 40 7,11	3,594	112 8	280 1 46,64	53,91	+ 0,3
1251	33	6	18 42 2,54	3,582	111 35	280 30 38,08	53,74	— 5,8
1252	$32\,r^{2}$	5	18 42 5,31	3,616	111 58	280 31 19,71	54,24	— 3,8
1253	$34\,\sigma$	3	18 42 51,38	3,714	116 32	280 42 50,70	55,71	— 0,6
1254	$35\,r^{2}$	5	18 43 1,20	5,613	112 54	280 45 18,00	54,20	— 2,3
1255	. . .	8	18 43 21,99	3,559	110 54	280 50 29,86	53,39	. . .
1256	. . .	6	18 43 53,69	3,626	113 25	280 58 25,31	54,40	— 3,1
1257	$36\,\xi^{2}$	6	18 45 26,91	3,559	110 54	281 21 43,64	53,39	— 1,6
1258	$37\,\xi^{2}$	5	18 45 47,54	3,579	111 21	281 26 55,06	53,56	— 8,1
1259	. . .	7.8	18 46 18,53	3,552	110 41	281 34 37,95	53,28	— 4,3
1260	. . .	8	18 48 7,82	. . .	. . .	282 1 57,37	. . .	. . .
1261	. . .	6.7	18 49 33,70	3,611	112 58	282 23 25,51	54,18	— 2,2
1262	$38\,\zeta$	4	18 49 52,50	3,816	120 9	282 28 7,54	57,25	— 1,6
1263	. . .	6.7	18 50 12,66	3,670	115 7	282 33 9,91	55,05	— 1,6
1264	. . .	6	18 51 34,03	3,851	121 19	282 53 30,43	57,77	— 3,0
1265	$39\,o$	4.5	18 52 41,44	3,586	112 1	283 10 21,67	53,78	— 4,4
1266	$40\,\tau$	4.5	18 54 26,60	3,747	117 57	283 36 38,96	56,22	— 1,2
1267	. . .	7	18 54 54,98	3,776	118 56	283 43 44,63	56,64	— 2,7
1268	. . .	7.8	18 54 55,69	3,603	112 47	283 43 55,34	54,05	— 1,4
1269	. . .	6.7	18 56 0,82	3,662	114 57	284 0 12,31	54,93	— 3,0
1270	$41\,\pi$	4	18 57 51,62	3,564	111 20	284 27 54,34	53,47	— 3,6
1271	. . .	7	18 57 59,56	3,532	110 6	284 29 55,42	52,98	— 2,3
1272	. . .	6.7	19 0 30,24	3,578	111 59	285 7 35,53	53,68	— 1,5
1273	. . .	7.8	19 0 33,44	3,401	104 54	285 8 21,61	51,02	— 4,2
1274	. . .	6.7	19 0 54,00	3,694	116 14	285 13 30,00	55,41	— 0,9
1275	. . .	8	19 3 15,02	3,468	107 41	285 48 45,31	52,03	— 1,0
1276	$42\,\psi$	6	19 3 16,01	3,674	115 35	285 49 0,13	55,12	+ 2,2
1277	. . .	6	19 3 21,30	3,645	114 30	285 50 19,53	54,67	— 0,3
1278	43 d	4	19 5 55,50	3,507	109 18	286 28 52,46	52,61	— 5,1
1279	. . .	7.8	19 6 28,40	3,505	109 13	286 37 6,00	52,58	+ 0,6
128	. . .	6	19 7 35,38	3,422	105 52	286 53 50,71	51,34	— 2,1
1281	. . .	6	19 8 38,27	3,594	112 46	287 9 34,04	53,92	— 1,0
1282	. . .	7	19 9 53 33	3,512	109 30	287 28 19,90	52,69	— 3,1
1283	$44\,\zeta^{2}$	5	19 10 3,84	3,478	108 13	287 30 57,58	52,17	0,0
1284	$45\,\zeta^{2}$	6	19 10 10,26	3,489	108 40	287 32 33,93	52,54	+ 9,5

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			h ′ ″	″	° ′	° ′ ″	″	′
1285	46 v	5.6	19 10 15,94	3,432	106 19	287 33 59,08	51,08	— 4,6
1286	p	6	19 12 1,31	3,740	118 14	288 0 19,61	56,12	— 2,3
1287	47 χ^1	5	19 13 5,42	3,647	114 53	288 16 21,23	54,71	— 3,.
1288	48 χ^2	6	19 13 12,53	3,645	114 47	288 18 7,88	54,68	— 1,8
1289	49 χ^3	6	19 13 22,57	3,632	114 20	288 20 38,48	54,49	+ 1,4
1290	o	6	19 14 16,90	3,793	120 7	288 34 13,50	56,89	— 2,5
1291	50	6	19 14 22,76	3,574	112 9	288 35 41,34	53,62	— 5,0
1292	. . .	6	19 14 47,55	3,408	105 26	288 41 53,31	51,13	— 3,2
1293	. . .	8	19 16 1,37	. . .	. . .	289 0 20,51	. . .	. . .
1294	. . .	6	19 16 26,75	3,487	108 45	289 6 41,24	52,31	. . .
1295	. . .	7.8	19 17 12,42	3,408	105 30	289 18 6,31	51,13	— 4,3
1296	. . .	6	19 17 28,98	3,712	117 23	289 22 14,70	55,68	+ 0,4
1297	. . .	8	19 18 9,50	3,414	105 45	289 32 22,52	51,21	— 1,3
1298	. . .	6	19 19 0,98	3,559	111 43	289 45 14,74	53,39	— 3,4
1299	. . .	7	19 20 11,44	3,737	118 23	290 2 51,65	56,05	. . .
1300	. . .	7.8	19 2 21,42	3,564	111 56	290 5 21,33	53,46	— 2,8
1301	. . .	7	19 22 28,48	3,622	114 17	290 37 7,21	54,34	— 3,7
1302	51 h^1	6	19 23 52,07	3,644	115 9	290 58 1,04	54,67	+ 0,5
1303	52 h^2	4.5	19 24 31,24	3,648	115 19	291 7 48,53	54,73	— 2,1
1304	. . .	7	19 24 46,29	3,485	109 17	291 11 34,41	52,38	— 3,2
1305	. . .	7	19 25 26,18	3,479	108 40	291 21 32,73	52,19	— 1,9
1306	53	6.7	19 27 47,28	3,607	113 52	291 56 49,27	54,11	— 4,0
1307	. . .	6	19 28 4,67	3,607	113 52	292 1 10,04	54,11	— 4,1
1308	54 e^1	5.6	19 29 15,32	3,430	106 44	292 18 49,84	51,46	— 2,7
1309	55 e^2	5	19 31 4,09	3,426	106 34	292 46 1,36	51,39	+ 1,3
1310	. . .	6	19 32 8,12	3,410	105 55	293 2 1,82	51,15	— 1,8
1311	n	6	19 33 14,05	3,837	122 23	293 18 30,78	57,56	+ 6,0
1312	56 f	6	19 34 40 93	3,510	110 13	293 40 14,02	52,65	— 1,4
1313	. . .	8	19 34 47,32	. . .	. . .	293 41 49,74	. . .	. . .
1314	. . .	8	19 35 27,86	3,511	110 19	293 51 57,87	52,67	. . .
1315	. . .	8	19 35 38,96	. . .	. .	293 54 44,41	. . .	. . .
1316	. . .	6.7	19 36 10,72	3,537	111 26	294 2 40,75	53,06	+ 12,2
1317	. . .	7	19 36 47,97	3,367	104 11	294 11 59,51	50,51	— 1,0
1318	. . .	7	19 37 41,23	3,335	102 48	294 25 18,50	50,03	+ 2,1
1319	57	5.6	19 40 33,52	3,488	109 32	295 8 25,27	52,33	+ 0,3
1320	58 ω	5.6	19 43 34,09	3,666	116 49	295 53 31,38	55,00	— 7,4
1321	59 b^2	5	19 44 57,13	3,688	117 41	296 9 46,92	55,33	— 1,6
1322	61 g	6	19 46 35,59	3,402	106 0	296 38 55,85	51,03	— 4,4
1323	60 A	5.6	19 46 44,70	3,659	116 43	296 41 10,52	54,89	— 0,6
1324	. . .	7	19 47 42,04	3,558	112 44	296 55 30,64	53 37	. .

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			♐ ° ′ ″	″	° ′	° ′ ″	″	″
1325	. . .	6	19 49 29,63	3,569	113 16	297 22 24,47	53,54	— 2,4
1326	62 c	5	19 50 20,30	3,696	118 15	297 35 4,44	55,44	— 4,7
1327	63	6	19 50 45,51	3,358	104 11	297 41 22,69	50,38	— 3,6
1328	. . .	6.7	19 51 52,09	3,563	113 9	297 58 1,30	53,45	— 3,4
1329	.	8	19 53 11,23	3,531	111 52	298 17 48,52	52,97	— 4,8
1330	64	6	19 54 2,06	3,311	102 9	298 30 30,84	49,68	— 1,4
1331	65	6	19 54 18,39	3,334	103 13	298 34 35,91	50,02	— 3,1
1332	. . .	8	19 57 50,98	3,509	111 10	299 27 44,73	52,64	— 3,7
1333	r	6	20 2 47,02	3,660	117 37	300 41 45,36	54,91	— 7,0

CAPRICORNVS.

			♐ ° ′ ″	″	° ′	° ′ ″	″	″
1334	. . .	7.8	19 52 13,19	3,395	105 58	298 3 17,91	50,93	— 2,4
1335	. . .	8	19 56 38,25	3,469	109 22	299 9 33,73	52,04	— 1,7
1336	. . .	7.8	19 57 11,30	3,384	105 36	299 17 49,50	50,75	— 4,2
1337	. . .	7	19 57 34,77	3,277	100 38	299 23 41,51	49,16	— 3,5
1338	. . .	8	19 58 48,72	3,480	109 57	299 42 10,83	52,21	— 2,8
1339	1	6.7	20 0 52,09	3,325	102 59	300 13 1,36	49,88	— 1,7
1340	2 ξ	6	20 1 16,44	3,329	103 11	300 19 6,54	49,94	— 5,3
1341	3	6.7	20 5 17,68	3,321	102 56	301 19 25,18	49,82	0,0
1342	4	6	20 6 15,14	3,529	112 25	301 33 47,13	52,94	— 4,7
1343	5 α^2	3	20 6 33,02	3,336	103 7	301 38 15,27	50,04	— 4,2
1344	6 α^2	3	20 6 56,80	3,339	103 9	301 44 12,03	50,09	— 4,8
1345	7 σ	5.6	20 7 50,25	3,466	109 44	301 57 33,71	51,99	— 5,4
1346	. . .	7	20 9 31,29	3,370	105 24	302 22 49,30	50,55	— 2,2
1347	8 ,	5	20 9 33,44	3,327	103 23	302 23 21,64	49,91	+ 0,1
1348	9 β	3.4	20 9 45,60	3,369	105 24	302 26 24,05	50,54	— 3,9
1349	. . .	7	20 12 14,36	3,356	104 53	303 3 35,44	50,35	— 2,9
1350	. . .	7	20 13 2,85	3,353	104 45	303 15 42,72	50,30	— 1,7
1351	. . .	7	20 13 30,53	3,466	110 4	303 22 37,88	51,99	— 4,3
1352	. . .	7.8	20 14 6,31	3,302	102 20	303 31 34,61	49,54	— 3,1
1353	10 π	5	20 15 51,36	3,438	108 51	303 57 50,43	51,57	+ 0,9
1354	11 ζ	5	20 17 26,30	3,427	108 28	304 21 34,44	51,41	— 4,1
1355	. . .	6.7	20 17 34,51	3,428	108 31	304 23 37,58	51,43	— 5,5
1356	. . }	7	20 18 23,43	3,442	109 14	304 35 51,48	51,64	— 0,2
1357	12 } o	6	20 18 24,89	3,442	109 14	304 36 13,41	51,64	— 5,8
1358	. . .	8	20 19 29,26	. . .	. .	304 52 18,97	. . .	. .

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			♓ ° ′ ″	″	° ′	♑ ° ′ ″	″	
1359	. . .	8	20 19 50,96	. . .	. . .	304 57 44,44	. . .	. . .
1360	. . .	6.7	20 20 56,26	3,581	115 36	305 14 3,93	53,72	— 1,7
1361	. . .	7.8	20 21 10,74	3,398	107 16	305 17 41,08	50,96	— 0,
1362	. . .	7	20 23 2,71	3,357	104 24	305 45 40,71	50,05	— 2,3
1363	. . .	7	20 24 12,21	3,393	107 12	306 3 3,17	50,90	— 5 5
1364	. . .	7.8	20 24 50,80	3,478	111 16	306 12 42,01	52,17	— 3,6
1365	13	6	20 26 7,32	3,364	105 50	306 31 49,87	50,45	— 6,
1366	. . .	8	20 26 27,81	3,403	107 48	306 36 57,22	51,04	— 3,
1367	14 τ	6	20 28 4,39	3,358	105 39	307 1 5,87	50,37	— 3,7
1368	15 υ	5	20 28 38,88	3,422	108 50	307 9 43,14	51,33	— 6,8
1369	. . .	6.7	20 29 17,27	3,380	106 49	307 19 19,01	50,70	— 4,3
1370	. . .	7	20 31 16,10	3,419	108 49	307 49 1,44	51,28	. . .
1371	16 ψ	4.5	20 34 13,55	3,568	115 59	308 33 23,24	53,52	+ 6,0
1372	17	6	20 34 32,91	3,486	112 14	308 38 13,68	52,28	— 7,1
1373	. . .	6	20 36 40,20	3,509	113 27	309 10 3,90	52,63	— 4,2
1374	. . .	8	20 36 46,18	. . .	. . .	309 11 32,64	. . .	. . .
1375	. . .	8	20 37 23,45	3,573	116 30	309 20 51,74	53,60	. . .
1376	. . .	6.7	20 37 58,85	3,409	108 46	309 29 42,71	51,13	— 3,0
1377	18 ω	5.6	20 39 51,46	3,596	117 39	309 57 51,93	53,94	— 1,1
1378	. . .	6	20 41 15,46	3,523	114 31	310 18 51,04	52,85	— 2,9
1379	19	6	20 43 28,56	3,401	108 40	310 52 8,38	51,01	+ 1,3
1380	. . .	8	20 44 30,29	3,574	117 7	311 7 34,39	53,61	. . .
1381	. . .	6.7	20 44 52,46	3,573	117 3	311 13 6,97	53,60	— 2,7
1382	. . .	6	20 46 27,72	3,359	106 47	311 36 55,83	50,40	— 2,6
1383	20	6	20 48 13,03	3,416	109 48	312 3 15,45	51,24	— 0,4
1384	21	6	20 49 35,28	3,386	108 18	312 23 40,15	50,78	— 3,8
1385	. . .	6	20 49 51,09	3,575	117 39	312 27 46,33	53,62	— 2,4
1386	22 η	5	20 53 0,01	3,426	110 38	313 15 0,09	51,38	+ 0,2
1387	23 9	5	20 54 41,01	3,372	108 1	313 40 15,18	50 58	— 2,8
1388	24 A	5.6	20 55 24,22	3,525	115 48	313 51 3,27	52,87	— 2,6
1389	25 χ^1	5.6	20 57 4,78	3,446	111 59	314 16 11,74	51,68	— 3,6
1390	26 χ^2	7	20 57 50,37	3,425	110 59	314 27 35,52	51,37	+ 1,5
1391	27 χ^3	6	20 58 5,48	3,431	111 21	314 31 22,24	51,46	— 0,5
1392	. . .	7.8	21 2 30,69	3,455	113 2	315 37 40,30	51,82	— 1,3
1393	28 φ	6	21 4 13,44	3,422	111 28	316 3 21,61	51,33	+ 0,6
1394	29	5	21 4 39,67	3,323	106 0	316 9 55,02	49,84	— 9,7
1395	30	6	21 6 43,04	3,372	108 49	316 40 45,54	50,57	— 0,5
1396	31	6.7	21 7 3,10	3,361	108 17	316 45 46,52	50,42	— 7,2
1397	. . .	7.8	21 7 4,52	3,412	111 10	316 46 7,81	51,18	— 5,4
1398	. . .	8	21 9 39,41	3,418	111 39	317 24 51,10	51,27	— 3,2

CAPRICORNVS.

Num. Catal. ZACH.	Num. Catalog. FLAMST.	Ordo mgn.	Ascenſio recta media in temp. ad init. anni 1800.	Praec. annua +	Diſt. a polo boreo.	Ascenſio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum PIAZZI.
			♑ ° ′ ″	″	° ′	° ′ ″	″	″
1399	32ι	5	21 11 5,46	3,346	107 41	317 46 21,84	50,19	— 5,5
1400	. .	6	21 11 31,08	3,448	113 31	317 52 46,14	51,72	— 4,4
1401	. .	7.8	21 12 39,63	3,447	113 36	318 9 54,40	51,70	— 3,1
1402	33	5.6	21 12 47,67	3,411	111 42	318 11 55,04	51,17	— 4,2
1403	34ζ	4	21 15 13,34	3,431	113 16	318 48 20,12	51,47	— 0,8
1404	35	6	21 15 53,07	3,412	112 5	318 58 16,56	51,19	— 8,4
1405	36b	5.6	21 17 17,56	3,422	112 40	319 19 23,43	51,33	— 0,9
1406	. .	7	21 18 44,94	3,373	110 1	319 41 14,14	50,60	— 3,8
1407	. .	8	21 20 10,53	3,373	110 6	320 2 37,94	50,60	— 4,9
1408	. .	6	21 21 0,34	3,457	115 28	320 15 5,06	51,86	— 7,8
1409	. .	7.8	21 22 36,22	3,318	107 4	320 39 3,30	49,78	— 5,6
1410	37	7	21 23 35,77	3,381	110 58	320 53 56,54	50,72	— 3,5
1411	38	7	21 23 38,74	3,384	111 8	320 54 41,15	50,76	— 1,2
1412	39ε	5	21 25 51,53	3,372	110 21	321 27 52,99	50,59	+ 0,1
1413	40γ	4	21 28 59,34	3,317	107 53	322 14 50,10	49,76	— 2,9
1414	41	5	21 30 35,65	3,422	114 9	322 38 54,81	51,33	— 4,3
1415	42d²	6	21 30 39,31	3,276	104 56	322 39 49,59	49,15	— 1,3
1416	43κ	5	21 31 27,95	3,348	109 46	322 51 59,27	50,23	+ 0,6
1417	. .	6	21 32 0,77	3,359	110 32	323 0 11,51	50,39	— 3,5
1418	44d²	6	21 32 8,71	3,278	105 18	323 2 10,61	49,18	— 3,1
1419	45	6	21 33 4,61	3,282	105 39	323 16 9,12	49,24	+ 2,7
1420	46c²	6	21 34 19,66	3,199	99 59	323 34 54,90	47,98	— 7,7
1421	47c²	6.7	21 35 35,31	3,203	100 11	323 53 49,67	48,00	— 4,7
1422	48λ	5	21 35 45,09	3,230	102 17	323 56 16,34	48,45	— 4,0
1423	50	6	21 35 54,25	3,235	102 36	323 58 33,72	48,53	— 3,7
1424	49δ	3	21 35 58,91	3,299	107 2	323 59 43,69	49,48	— 1,7
1425	. .	7.8	21 39 11,51	3,306	107 46	324 47 52,61	49,59	— 4,2
1426	. .	8	21 39 55,31	. . .	. . .	324 58 49,57	. . .	. . .
1427	. .	7.8	21 40 34,06	3,329	109 53	325 8 30,93	49,94	— 3,9
1428	51μ	5	21 42 22,35	3,253	104 29	325 35 35,25	48,80	— 7,1
1429	. .	8	21 44 5,36	3,275	106 12	326 1 20,33	49,13	— 5,3
1430	. .	7.8	21 45 43,76	3,310	108 50	326 25 56,40	49,66	— 2,7
1431	. .	7.8	21 46 53,41	3,269	106 4	326 43 21,22	49,04	— 6,4

AQVARIVS.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Dist. a polo boreo.	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h ′ ″	″	° ′	° ′ ″	″	″
1432	. . .	6	20 21 26,52	3,261	100 32	305 21 37,84	48,92	— 3,8
1433	1	5.6	20 29 9,52	3,063	90 12	307 17 22,80	45,95	— 5,0
1434	. . .	8	20 29 47,05	. . .	. . .	307 26 45,75	. . .	. . .
1435	. . .	7	20 33 43,19	3,144	94 37	308 25 47,79	47,16	. . .
1436	. . .	8	20 35 44,12	. . .	. . .	308 56 1,75	. . .	. . .
1437	2ε	4.5	20 36 50,29	3,246	100 13	309 12 34,32	48,69	— 1,8
1438	3	4	20 37 10,46	3,163	95 45	309 17 36,94	47,45	— 6,3
1439	. . .	8	20 39 33,01	3,079	91 5	309 53 15,20	46,18	. . .
1440	4	6	20 40 48,74	3,173	96 22	310 12 11,04	47,60	— 2,8
1441	. . .	7.8	20 41 27,93	3,312	103 57	310 21 59,01	49,68	— 3,1
1442	5	6	20 41 33,57	3,170	96 15	310 23 23,48	47,56	— 6,3
1443	6μ	5	20 41 51,30	3,233	99 43	310 27 49,49	48,49	— 4,2
1444	. . .	6	20 42 8,21	3,280	102 19	310 32 3,11	49,21	— 5,1
1445	. . .	8	20 43 36,84	3,230	99 42	310 54 12,62	48,48	. . .
1446	. . .	8	20 43 59,40	. . .	. . .	310 59 51,01	. . .	. . .
1447	7	6	20 46 4,73	3,244	100 27	311 31 10,91	48,66	— 0,6
1448	8	6	20 48 54,35	3,302	103 49	312 13 35,24	49,54	— 4,3
1449	10	6.7	20 49 58,00	3,166	96 15	312 29 29,98	47,50	— 5,6
1450	11	6	20 50 1,36	3,154	95 30	312 30 20,34	47,31	— 0,2
1451	9	6	20 50 5,99	3,310	104 18	312 31 29,83	49,66	— 2,1
1452	. . .	7	20 51 4,24	3,276	102 28	312 46 3,62	49,14	— 1,7
1453	12	5.6	20 53 29,35	3,172	96 36	313 22 20,26	47,58	—11,5
1454	. . .	8	20 55 1,96	3,146	95 9	313 45 29,37	47,19	. . .
1455	13,	5	20 58 41,08	3,264	102 10	314 40 16,19	48,97	— 3,8
1456	. . .	8	20 59 8,97	. . .	. . .	314 47 14,60	. . .	. . .
1457	. . .	8	20 59 57,09	. . .	. . .	314 59 46,29	. . .	. . .
1458	. . .	7.8	21 0 37,41	3,314	105 17	315 9 21,20	49,72	— 2,0
1459	. . .	8	21 3 26,62	. . .	. . .	315 51 39,37	. . .	. . .
1460	. . .	8	21 4 16,30	3,187	97 54	316 4 4,53	47,81	— 3,8
1461	14	6	21 5 32,61	3,222	100 2	316 23 9,22	48,33	— 9,8
1462	. . .	8	21 5 44,61	3,221	99 59	316 26 9,08	48,31	— 2,8
1463	15	6.7	21 7 41,06	3,146	95 21	316 55 15,84	47,20	—10,1
1464	. . .	7	21 8 7,34	3,336	107 1	317 1 50,12	50,05	— 4,1
1465	16	6	21 10 34,65	3,144	95 24	317 38 39,77	47,16	— 4,7
1466	. . .	8	21 11 10,11	3,144	95 24	317 47 31,63	47,16	. . .
1467	. . .	8	21 11 13,97	. . .	. . .	317 48 29,51	. . .	. . .
1468	17	6	21 12 12,17	3,219	100 10	318 3 2,58	48,29	— 7,9
1469	18	6	21 13 14,74	3,274	103 44	318 18 41,09	49,12	— 2,7
1470	20	6	21 14 25,67	3,124	94 15	318 36 25,04	46,87	— 3,4
1471	19	6	21 14 27,46	3,224	100 35	318 36 51,85	48,36	—12,9

AQVARIVS.

Num. Catal. ZACH.	Num. Catalog. FLAMST.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Dist. a polo boreo.	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Diff. cum PIAZZI.
			H ′ ″	″	° ′	° ′ ″	″	″
1472	21	5	21 14 50,45	3,126	94 24	318 42 36,81	46,90	+ 2,5
1473	. . .	7	21 15 31,71	3,261	102 56	318 52 55,62	48,92	— 0,7
1474	. . .	7.8	21 16 46,19	3,252	102 31	319 11 32,85	48,79	0,0
1475	. . .	7.8	21 17 23,05	3,252	102 26	319 20 45,70	48,78	— 1,6
1476	. . .	7	21 19 41,49	3,291	105 9	319 55 22,41	49,37	+ 2,0
1477	22 β	3.4	21 21 1,21	3,155	96 27	320 15 18,19	47,34	— 5,9
1478	. . .	8	21 23 14,88	. . .	. . .	320 48 43,25	. . .	. . .
1479	. . .	6.7	21 24 49,87	3,130	94 52	321 12 28,01	46,95	— 3,1
1480	23 ξ	5	21 27 5,49	3,186	98 45	321 46 22,56	47,79	— 4,4
1481	. . .	8	21 27 17,24	. . .	. . .	321 49 18,58	. . .	. . .
1482	24	7	21 29 12,54	3,073	90 57	322 18 8,08	46,10	— 0,9
1483	25 d	5.6	21 29 24,31	3,040	88 39	322 21 4,63	45,60	— 8,5
1484	. . .	8	21 31 40,99	. . .	. . .	322 55 14,80	. . .	. . .
1485	26	6	21 31 57,90	3,054	89 37	322 59 28,54	45,81	— 4,2
1486	. . .	8	21 33 24,46	. . .	. . .	323 21 6,93	. . .	. . .
1487	. . .	8	21 33 55,73	3,138	95 38	323 28 55,90	47,07	. . .
1488	. . .	7.8	21 34 14,22	3,198	99 57	323 33 33,33	47,97	— 4,3
1489	. . .	8	21 36 56,47	3,135	95 31	324 14 7,08	47,02	. . .
1490	. . .	8	21 37 5,17	3,140	96 50	324 16 17,50	47,28	. . .
1491	. . .	7	21 38 51,51	3,246	103 39	324 42 52,68	48,70	— 4,0
1492	. . .	8	21 40 18,31	. . .	. . .	325 4 34,68	. . .	. . .
1493	. . .	8	21 41 20,10	. . .	. . .	325 20 1,47	. . .	. . .
1494	. . .	8	21 43 58,46	. . .	. . .	325 59 36,93	. . .	. . .
1495	. . .	8	21 45 37,08	. . .	. . .	326 24 16,16	. . .	. . .
1496	. . .	8	21 46 35,55	. . .	. . .	326 38 53,20	. . .	. . .
1497	. . .	9	21 47 20,66	. . .	. . .	326 50 9,83	. . .	. . .
1498	. . .	8	21 47 25,40	. . .	. . .	326 51 21,04	. . .	. . .
1499	. . .	6.7	21 47 32,79	3,354	112 8	326 53 11,81	50,32	— 3,3
1500	. . .	8	21 47 36,45	3,235	103 37	326 54 6,73	48,53	— 5,4
1501	. . .	8	21 48 24,75	3,065	90 25	327 6 11,24	45,97	. . .
1502	28	6	21 50 50,74	3,063	90 21	327 42 41,07	45,94	— 9,0
1503	. . .	7.8	21 51 10,35	3,301	108 51	327 47 35,22	49,52	— 6,1
1504	29	6	21 51 28,69	3,294	107 55	327 52 10,37	49,42	— 7,4
1505	30	5.6	21 52 44,50	3 151	97 29	328 11 7,46	47,27	— 3,8
1506	31 o	5	21 52 57,69	3,096	93 7	328 14 25,37	46,45	—10,4
1507	. . .	6	21 53 12,74	3,428	117 47	328 18 11,50	51,43	— 8,4
1508	32	5.6	21 54 29,78	3,082	91 52	328 37 26,74	46,23	— 8,0
1509	34 *	3	21 55 30,27	3,081	91 17	328 52 34,09	46,21	— 8,9
1510	33 i	4.5	21 55 37,24	3,240	104 50	328 54 18,64	48,61	—11,4
1511	35	5.6	21 57 59,44	3,299	109 29	329 29 51,56	49,48	— 4,2

AQVARIVS.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Aſcenſio recta media in temp. ad init. anni 1800.	Praec. annua +	Diſt. a polo boreo	Aſcenſio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h ′ ″	″	° ′	° ′ ″	″	″
1512	36	7	21 58 51,64	3,166	99 10	329 42 54,65	47,50	— 4,0
1513	37	6	21 59 50,81	3,198	101 48	329 57 42,15	47,98	— 1,0
1514	38 e	5.6	21 59 55,23	3,207	102 32	329 58 48,42	48,11	— 9,7
1515	. . .	7	21 59 56,03	3,112	94 52	329 59 4,00	46,69	— 6,4
1516	. . .	6.7	22 0 7,24	3,120	95 15	330 1 48,53	46,80	— 5,2
1517	39	6	22 1 37,66	3,236	105 10	330 24 24,91	48,54	— 7,7
1518	. . .	7.8	22 2 10,57	3,144	97 27	330 32 38,54	47,17	— 7,3
1519	. . .	7.8	22 2 18,05	3,124	95 42	330 34 30,81	46,87	— 2,9
1520	40	6.7	22 2 43,97	3,208	102 54	330 40 59,57	48,13	— 3,4
1521	41	5.6	22 3 13,80	3,320	112 4	330 48 26,93	49,81	— 4,3
1522	42	6	22 6 4,59	3,215	103 49	331 31 8,78	48,23	— 7,8
1523	43 9	4.5	22 6 16,12	3,156	98 46	331 34 1,81	47,34	— 6,6
1524	. . .	6	22 6 17,82	3,171	100 2	331 34 27,32	47,57	— 5,9
1525	44	6	22 6 39,57	3,130	96 23	331 39 50,61	46,95	— 2,3
1526	45	6	22 8 15,77	3,215	104 18	332 3 56,47	48,23	— 6,7
1527	46 ς	6	22 9 39,80	3,154	98 49	332 24 56,97	47,32	— 3,8
1528	47	5	22 10 33,56	3,312	112 36	332 38 23,85	49,69	— 3,4
1529	48 γ	3.4	22 11 19,06	3,084	92 23	332 49 45,88	46,26	— 4,2
1530	49	6	22 12 20,35	3,350	115 46	333 5 5,17	50,26	+ 2,3
1531	51	6	22 13 41,28	3,120	95 51	333 25 19,18	46,80	— 8,0
1532	50	6	22 13 43,22	3,214	104 31	333 25 48,24	48,21	— 4,2
1533	. . .	7	22 14 16,14	3,081	92 12	333 34 2,11	46,22	— 3,6
1534	52 π	5	22 15 3,63	3,055	89 38	333 45 54,42	45,83	— 4,2
1535	. . .	6	22 15 5,68	3,328	114 41	333 46 25,20	49,93	— 5,0
1536	. . } d	8	22 15 40,85	3,247	107 45	333 55 12,72	48,71	. . .
1537	53 }	6	22 15 41,86	3,247	107 45	333 55 27,83	48,71	— 4,1
1538	54	6	22 16 3,41	3,185	102 14	334 0 51,17	47,78	— 3,8
1539	55 ζ	4	22 18 31,71	3,068	91 2	334 37 55,65	46,05	— 6,5
1540	56	6	22 19 33,17	3,216	105 36	334 53 17,49	48,25	— 7,8
1541	57 σ	5	22 20 3,09	3,175	101 42	335 0 46,32	47,63	— 5,2
1542	58	6	22 21 4,28	3,176	101 55	335 16 4,17	47,65	— 6,5
1543	59 υ	5	22 23 43,80	3,275	111 44	335 55 56,96	49,13	— 5,7
1544	60	6	22 23 43,97	3,083	92 36	335 55 59,54	46,25	— 7,0
1545	61	6	22 25 1,54	3,238	108 29	336 15 23,15	48,57	— 0,9
1546	62 τ	4	22 25 4,50	3,069	91 9	336 16 7,56	46,04	— 7,5
1547	63 κ	5	22 27 23,74	3,107	95 15	336 50 56,14	46,61	— 9,9
1548	. . .	8	22 27 51,65	3,141	98 54	336 57 54,72	47,12	. . .
1549	. . .	8	22 28 23,94	3,160	101 4	337 5 59,15	47,41	. . .
1550	64	6.7	22 28 43,80	3,159	101 4	337 10 57,05	47,39	— 1,5
1551	. . .	7	22 29 34,00	3,152	100 24	337 23 30,00	47,29	— 2,1

AQVARIVS.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Dist. a polo boreo.	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h ′ ″	″	° ′	° ′ ″	″	″
1552	. . .	7	22 29 45,89	3,128	97 34	337 26 28,31	46,93	— 3,4
1553	65	6	22 32 29,16	3,155	101 9	338 7 17,34	47,33	— 4,3
1554	. . .	6.7	22 32 33,65	3,140	99 21	338 8 24,80	47,10	— 4,8
1555	. . .	8	22 32 44,88	3,152	98 15	338 11 13,21	46,98	— 2,7
1556	67	6	22 32 46,91	3,129	98 0	338 11 43,64	46,93	— 1,6
1557	60 g^1	6	22 32 48,30	3,258	109 52	338 12 4,50	48,58	— 4,5
1558	. . .	8	22 34 49,26	3,150	100 41	338 42 18,93	47,26	— 1,4
1559	68 g^2	6	22 36 47,34	3,238	110 39	339 11 50,04	48,58	— 4,6
1560	69 τ^2	5.6	22 37 4,65	3,185	105 6	339 16 9,74	47,78	— 4,7
1561	70	6	22 37 57,94	3,155	101 36	339 29 29,16	47,33	— 0,7
1562	71 τ^2	5.6	22 38 59,28	3,180	104 39	339 44 49,12	47,70	— 2,4
1563	72	7.8	22 40 20,37	3,126	98 22	340 5 5,62	46,89	— 6,0
1564	73 λ	4	22 42 10,40	3,126	98 38	340 32 35,99	46,90	— 4,7
1565	74	6	22 42 56,12	3,158	102 41	340 44 1,80	47,37	—10,7
1566	75	6.7	22 43 33,39	3,162	103 15	340 53 20,82	47,44	— 5,8
1567	76 δ	3.4	22 44 1,27	3,190	106 53	341 0 19,11	47,86	— 8,5
1568	78	6	22 44 8,82	3,122	98 16	341 2 12,36	46,83	— 5,5
1569	77	6	22 44 9,69	3,195	107 20	341 2 25,57	47,93	— 7,6
1570	a F. austr.	1.2	22 46 34,12	3,343	120 41	341 58 31,80	50,15	— 8,8
1571	80	7.8	22 46 55,56	3,102	95 52	341 43 53,37	46,53	— 5,2
1572	. . .	8	22 49 2,71	3,161	104 8	342 15 40,71	47,42	— 6,4
1573	. . .	7	22 49 14,35	3,261	116 14	342 18 35,22	48,92	— 5,2
1574	. . .	8	22 49 30,50	3,084	93 30	342 22 34,51	46,26	— 4,8
1575	. . .	7	22 49 52,58	3,130	99 57	342 28 8,63	46,95	— 7,3
1576	81	6	22 50 59,47	3,115	98 8	342 44 52,03	46,74	— 3,5
1577	. . .	7.8	22 51 10,05	3,098	95 47	342 47 30,78	46,48	— 5,6
1578	. . .	8	22 51 21,42	3,115	98 3	342 50 21,34	46,73	. . .
1579	82	6	22 52 8,99	3,111	97 39	343 2 14,79	46,67	— 0,9
1580	83 h^1	6	22 54 43,45	3,116	98 4	343 40 51,77	46,75	— 6,8
1581	84 h^2	6.7	22 54 53,43	3,117	98 50	343 43 21,46	46,76	— 7,0
1582	85 h^3	6	22 55 27,50	3,117	99 1	343 51 52,49	46,76	— 3,6
1583	86 c^1	6	22 55 54,28	3,229	114 49	343 58 34,26	48,44	+ 1,7
1584	87 h^4	7.8	22 56 47,19	3,114	98 46	344 11 47,82	46,72	— 9,4
1585	. . .	6	22 57 29,56	3,265	119 54	344 22 23,33	48,98	— 5,5
1586	88 c^2	4	22 58 45,64	3,206	112 15	344 41 24,61	48,10	— 4,2
1587	89 c^3	5	22 59 12,59	3,211	113 32	344 48 8,80	48,17	— 4,3
1588	. . .	7.8	23 0 17,63	3,101	97 3	345 4 24,44	46,52	— 6,4
1589	90 φ	5	23 3 57,43	3,099	97 7	345 59 21,49	46,49	— 2,8
1590	91 ψ^1	4.5	23 5 24,21	3,115	100 10	346 21 3,19	46,75	—10,0
1591	92 χ	5.6	23 6 28,52	3,106	98 49	346 37 7,74	46,60	— 3,2

AQVARII.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Dist. a polo boreo.	Ascensio recta media in part. aequat. ad init. anni 800.	Praec. annua +	Differ. cum Piazzi.
			h ′ ″	″	° ′	° ′ ″	″	″
1592	93 ψ^2	5	23 7 29,96	3,114	100 16	346 52 29,49	46,71	— 5,2
1593	95 ψ^3	5	23 8 32,91	3,115	100 42	347 8 13,60	46,73	— 3,5
1594	94	6	23 8 34,46	3,139	104 33	347 8 36,95	47,04	+ 0,8
1595	96	6	23 9 1,21	3,091	96 13	347 15 18,22	46,37	— 3,2
1596	. . .	7	23 10 21,86	3,094	96 59	347 35 27,62	46,42	. . .
1597	. . .	5.6	23 10 34,54	3,211	118 5	347 38 38,11	48,17	— 2,4
1598	. . .	8	23 10 54,66	. . .	. . .	347 43 39,91	. . .	. . .
1599	97	6	23 12 9,37	3,139	106 8	348 2 20,56	47,09	—13,7
1600	98 b^2	5	23 12 26,90	3,165	111 11	348 6 43,49	47,48	— 6,3
1601	. . .	8	23 13 23,33	3,104	99 33	348 20 50,00	46,57	— 5,1
1602	99 b^2	5	23 15 31,39	3,161	111 44	348 52 50,78	47,42	— 8,8
1603	. . .	8	23 16 29,39	. . .	. . .	349 7 20,89	. . .	. . .
1604	. . .	7	23 17 39,91	3,113	102 33	349 24 58,60	46,70	+ 1,1
1605	100 b^3	6	23 21 11,67	3,152	112 28	350 17 54,98	47 28	— 7,8
1606	. . .	6	23 21 18,79	3,151	112 21	350 19 41,77	47,27	— 6,3
1607	101 b^4	5	23 22 47,55	3,146	112 1	350 41 53,28	47,20	— 6,2
1608	Ceti	6	23 24 23,99	3,120	106 21	351 5 59,91	46,80	— 4,6
1609	. . .	7.8	23 25 12,59	3,089	98 34	351 18 8,83	46,34	— 5,4
1610	Ceti	8	23 25 17,46	3,118	106 24	351 19 21,83	46,77	— 6,9
1611	. . .	7	23 27 38,52	3,114	106 11	351 54 37,75	46,71	. . .
1612	. . .	7	23 28 14,53	3,153	111 58	352 3 38,00	47,00	— 5,7
1613	102 ω^1	5	23 29 23,99	3,108	105 19	352 20 59,89	46,64	— 6,7
1614	103 A^1	5	23 31 11,27	3,116	109 8	352 47 49,04	46,76	— 7,3
1615	104 A^2	5	23 31 22,04	3,115	108 55	352 50 30,61	46,74	—10,6
1616	105 ω^2	6	23 32 20,22	3,104	105 39	353 5 3,29	46,56	— 3,7
1617	106 A^3	5	23 33 48,75	3,112	109 23	353 27 10,89	46,69	— 6,1
1618	107 A^4	6	23 35 36,87	3,110	109 47	353 54 13,09	46,65	—10,3
1619	seq.	8	23 35 40,00	3,110	109 47	353 54 59,97	46,65	. . .
1620	. . .	8	23 35 58,18	. . .	. . .	353 59 32,76	. . .	. . .
1621	. . .	6	23 36 57,65	3,089	103 1	354 14 24,71	46,34	— 7,2
1622	. . .	6.7	23 38 15,49	3,075	97 29	354 33 52,53	46,14	— 4,7
1623	Ceti	6.7	23 39 10,88	3,096	106 58	354 47 43,24	46,44	— 3,2
1624	. . .	7	23 40 11,76	3,104	111 20	355 2 56,37	46,56	. . .
1625	108 A^5	6	23 41 0,91	3,099	110 1	355 15 13,69	46,49	—13,7

P. I S C E S.

Num. Catal. ZACH.	Num. Catalog. FLAMST.	Ordo mgn.	Aſcenſio recta media in temp. ad init. anni 1800.	Praec. annua +	Diſt. a polo boreo.	Aſcenſio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum PIAZZI.
			h ′ ″	″	° ′	° ′ ″	″	″
1626	1	6	22 44 45,27	3,060	90 0	341 11 19,11	45,90	— 4,7
1627	. . .	8	22 47 21,44	3,036	87 15	341 50 21,56	45,59	. . .
1628	2	6.7	22 49 12,18	3,060	90 6	342 18 2,74	45,90	+ 4,9
1629	3	6	22 50 22,25	3,066	90 53	342 35 33,78	45,99	— 3,2
1630	. . .	7	22 50 31,25	3,046	88 3	342 37 48,71	45,69	— 6,0
1631	. . .	8	22 51 32,03	3,043	87 32	342 53 0,39	45,64	. . .
1632	4β	5	22 53 41,88	3,041	87 15	343 25 29,13	45,61	— 5,4
1633	. . .	8	22 55 3,28	. . .	. .	343 45 49,27	. . .	. . .
1634	5A	6	22 58 26,29	3,053	88 57	344 36 34,30	45,80	— 7,6
1635	. . .	8	22 59 9,29	3,053	88 56	344 47 19,31	45,80	— 5,4
1636	. . .	8	23 1 4,06	3,036	86 5	345 16 0,93	45,54	. . .
1637	. . .	8	23 3 50,42	. . .	. .	345 57 36,35	. . .	. . .
1638	6γ	4.5	23 6 47,78	3,048	87 48	346 41 56,63	45,72	— 9,8
1639	. . .	8	23 8 35,95	. . .	. .	347 8 59,22	. . .	. . .
1640	7b	6	23 10 9,36	3,037	85 42	347 32 20,38	45,56	— 9,3
1641	. . .	8	23 13 12,20	. . .	. .	348 18 3,02	. . .	. . .
1642	. . .	8	23 13 53,26	. . .	. .	348 28 18,91	. . .	. . .
1643	. . .	8	23 14 4,43	. . .	. .	348 31 6,49	. . .	. . .
1644	8κ²	5.6	23 16 40,74	3,059	89 50	349 10 11,04	45,88	—10,1
1645	9κ²	6	23 17 0,00	3,060	89 58	349 14 59,94	45,90	— 3,9
1646	10 9	5	23 17 49,72	3,037	84 43	349 27 25,79	45,54	— 8,4
1647	11	6.7	23 19 10,88	3,071	92 53	349 47 43,19	46,07	— 6,6
1648	. . .	7.8	23 19 11,63	3,082	95 37	349 47 54,51	46,24	— 7,1
1649	12	6	23 19 14,90	3,068	92 8	349 48 43,45	46,03	— 5,5
1650	. . .	7.8	23 21 11,42	3,080	95 11	350 17 51,32	46,20	— 6,3
1651	13	6	23 21 41,84	3,068	92 11	350 25 27,65	46,02	— 8,8
1652	14	6	23 23 51,81	3,069	92 21	350 57 57,13	46,03	— 0,7
1653	15	6	23 25 15,09	3,059	89 47	351 18 46,34	45,89	— 3,3
1654	. . .	8	23 26 4,26	. . .	. .	351 31 3,88	. . .	. . .
1655	16	6	23 26 11,06	3,057	89 0	351 32 45,89	45,85	— 5,1
1656	17ι	5	23 29 39,92	3,049	85 27	352 24 58,78	45,74	— 4,7
1657	. . .	6.7	23 29 43,90	3,033	81 26	352 25 58,54	45,50	— 5,1
1658	18λ	5	23 31 50,64	3,059	89 19	352 57 39,64	45,59	— 6,8
1659	. . .	7	23 34 36,51	3,044	83 55	353 39 7,61	45,66	— 6,1
1660	. . .	8	23 34 44,97	. . .	. .	353 41 14,54	. . .	. . .
1661	19	5	23 36 10,70	3,054	87 37	354 2 40,48	45,81	— 8,5
1662	20	5.6	23 37 39,32	3,069	93 52	354 24 49,74	46,03	— 2,0
1663	. . .	6.7	23 38 35,29	3,057	88 54	354 38 49,40	45,86	— 5,6
1664	21	6	23 39 13,17	3,062	90 2	354 48 17,57	45,90	— 8,3
1665	22	6	23 41 43,77	3,056	88 11	355 25 56,56	45,84	— 5,3

PISCES.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Dist. a polo boreo.	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h	"	° '	° ' "	"	"
1666	23	6	23 42 15,17	3,021	69 26	355 33 47,54	45,32	— 5,2
1667	24	6	23 42 39,00	3,067	94 16	355 39 44,94	46,01	— 1,9
1668	25	6.7	23 42 50,32	3,057	89 1	355 42 34,74	45,86	— 8,3
1669	. . .	6.7	23 44 32,51	3,061	91 0	356 8 7,61	45,92	— 3,4
1670	26	6	23 44 54,17	3,050	84 2	356 13 52,57	45,75	— 2,9
1671	. . .	8	23 46 32,80	3,054	86 22	356 38 11,94	45,81	. . .
1672	27	5	23 48 25,98	3,065	94 40	357 6 29,13	45,97	— 7,0
1673	28 a	4	23 49 2,77	3,053	84 15	357 15 41,54	45,80	— 5,4
1674	. . .	8	23 49 16,05	3,064	93 58	357 19 0,82	45,96	. . .
1675	. . .	8	23 50 13,36	. . .	. . .	357 33 20,40	. . .	. . .
1676	29	5	23 51 34,44	3,063	94 8	357 53 36,60	45,95	— 9,9
1677	30	4-5	23 51 42,00	3,065	97 7	357 55 29,95	45,98	— 6,3
1678	. . .	8	23 51 47,41	3,063	93 53	357 56 51,11	45,95	— 7,3
1679	31 c²	6	23 52 9,96	3,053	82 9	358 2 29,56	45,79	— 4,0
1680	32 c²	6	23 52 16,83	3,053	82 38	358 4 12,47	45,80	—10,2
1681	. . .	8	23 52 32,45	3,063	94 8	358 8 6,71	45,94	. . .
1682	. . .	6.7	23 54 48,83	3,060	91 37	358 42 12,43	45,90	— 8,4
1683	33	5	23 55 5,80	3,063	96 50	358 46 26,97	45,95	— 7,5
1684	. . .	7	23 57 57,61	3,059	93 34	359 29 24,21	45,89	— 3,8
1685	. . .	8	23 59 40,84	3,059	93 40	359 55 12,64	45,89	—12,6
1686	34	6	23 59 46,07	3,059	79 58	359 56 31,00	45,89	— 7,6
1687	. . .	8	0 0 55,08	. . .	. . .	0 13 46,14	. . .	. . .
1688	. . .	8	0 3 33,15	3,059	89 44	0 53 17,26	45,89	. . .
1689	. . .	8	0 4 21,61	3,059	89 49	1 5 24,12	45,89	. . .
1690	35	6	0 4 41,22	3,063	82 17	1 10 18,31	45,95	— 2,7
1691	. . .	8	0 4 42,31	3,063	82 18	1 10 34,63	45,95	— 3,9
1692	36	6.7	0 6 17,90	3,067	82 52	1 34 28,51	46,00	— 5,3
1693	. . .	8	0 6 24,32	3,060	89 16	1 36 4,73	45,90	— 4,7
1694	37	7	0 6 27,42	3,068	77 12	1 36 51,32	46,02	— 3,9
1695	38	6	0 7 6,59	3,065	82 14	1 46 38,77	45,98	— 6,5
1696	39	7	0 7 28,09	3,071	74 47	1 52 1,30	46,06	— 1,3
1697	. . .	7	0 7 31,25	3,060	89 25	1 52 48,82	45,90	— 3,2
1698	. . .	7.8	0 7 34,31	3,057	92 58	1 53 34,61	45,86	— 4,0
1699	40	6	0 9 37,00	3,075	74 52	2 24 15,05	46,12	— 7,0
1700	41 d	5.6	0 10 18,98	3,067	82 55	2 34 44,74	46,00	— 5,4
1701	42	6	0 12 5,38	3,075	77 38	3 1 20,67	46,12	— 2,7
1702	43	7	0 14 17,72	3,076	76 48	3 34 25,85	46,14	— 6,7
1703	44	6	0 15 9,54	3,061	89 10	3 47 23,14	45,91	—11,6
1704	45	6	0 15 23,77	3,069	83 25	3 50 56,58	46,04	— 3,8
1705	. . .	7	0 15 40,51	3,091	70 58	3 55 7,72	46,36	— 4,7

PISCES.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Dist. a polo boreo.	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h ′ ″	″	° ′	° ′ ″	″	″
1706	. . .	8	0 17 4,53	3,062	88 18	4 16 7,91	45,93	— 2,5
1707	46	7	0 17 35,06	3,093	71 36	4 23 45,93	46,40	— 2,4
1708	47	6	0 17 38,30	3,090	73 15	4 24 34,55	46,35	— 3,7
1709	48	6	0 17 50,18	3,087	74 40	4 27 32,76	46,51	— 2,9
1710	49	7	0 20 24,60	3,091	75 4	5 6 8,94	46,57	— 0,6
1711	. . .	7	0 21 13,03	3,090	75 5	5 18 15,50	46,35	— 5,5
1712	51	6	0 22 5,16	3,073	84 9	5 31 17,40	46,09	— 4,4
1713	52	6	0 22 7,43	3,099	70 48	5 31 51,44	46,48	— 2,5
1714	. . .	8	0 22 31,23	3,094	75 9	5 37 48,42	46,41	. . .
1715	. . .	8	0 23 12,77	3,107	70 45	5 48 11,57	46,60	. . .
1716	. . .	8	0 23 15,23	3,056	91 43	5 48 48,51	45,84	— 3,9
1717	. . .	6.5	0 25 18,01	3,056	91 56	6 19 30,13	45,84	— 4,3
1718	. . .	8	0 24 32,50	3,091	77 44	6 8 7,55	46,36	. . .
1719	. . .	8	0 25 33,77	3,091	77 55	6 25 26,47	46,37	. . .
1720	53	6	0 26 22,97	3,098	75 52	6 35 44,54	46,47	— 7,3
1721	. . .	7	0 27 12,69	3,065	87 58	6 48 10,40	45,98	— 5,0
1722	54	6.7	0 28 58,89	3,121	69 50	7 14 43,32	46,82	— 1,2
1723	55	6	0 29 25,24	3,122	69 40	7 21 18,58	46,85	— 0,9
1724	. . .	8	0 30 28,72	. . .	. . .	7 37 10,88	. . .	. . .
1725	. . .	8	0 30 52,30	. . .	. . .	7 43 4,56	. . .	. . .
1726	. . .	8	0 32 25,92	. . .	. . .	8 6 28,77	. . .	. . .
1727	. . .	8	0 34 53,26	3,057	90 50	8 43 18,90	45,85	— 3,5
1728	57	6.7	0 36 5,96	3,120	75 37	9 1 29,44	46,80	— 4,3
1729	58	6	0 36 36,27	3,101	79 7	9 9 4,01	46,51	— 4,8
1730	59	6	0 36 40,76	3,130	71 31	9 10 11,34	46,95	— 5,7
1731	60	6	0 37 3,57	3,081	84 22	9 15 53,48	46,21	—15,1
1732	61	7.8	0 37 19,05	3,117	70 10	9 19 45,76	46,75	+ 3,8
1733	. . .	6	0 37 53,63	3,076	85 45	9 28 24,41	46,14	— 5,0
1734	62	6	0 37 55,39	3,083	83 48	9 28 50,84	46,25	—12,6
1735	63 δ	5	0 38 19,12	3,084	83 30	9 34 46,86	46,26	— 8,9
1736	64	5.6	0 38 29,16	3,122	74 8	9 37 17,44	46,83	— 1,4
1737	65 i	6	0 39 10,54	3,171	63 23	9 47 38,16	47,57	— 4,0
1738	. . .	8	0 41 7,27	. . .	. . .	10 16 49,08	. . .	. . .
1739	. . .	8	0 43 1,98	3,073	87 0	10 45 29,70	46,09	— 6,3
1740	66	6	0 44 1,13	3,142	71 54	11 0 16,91	47,13	—14,2
1741	. . .	7.8	0 44 58,49	3,085	84 14	11 14 37,42	46,28	— 9,0
1742	67 k	6	0 45 14,95	3,187	63 53	11 18 43,88	47,80	— 2,2
1443	. . .	7	0 45 40,48	3,119	77 8	11 25 7,13	46,79	— 4,4
1744	. . .	6	0 45 59,99	3,185	64 45	11 29 59,91	47,77	— 1,6
1745	38 nAndr	5	0 46 32,89	3,169	67 40	11 38 13,37	47,54	— 0,7

PISCES.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Dist. a polo boreo.	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			h m s	s	° ′	° ′ ″	s	s
1746	68 h^1	6	0 47 2,54	3,201	62 5	11 45 35,03	48,01	— 1,0
1747	. .	7	0 47 25,74	3,121	77 23	11 51 26,13	46,81	— 4,2
1748	. .	8	0 47 41,04	. . .	. .	11 55 15,60	. . .	. . .
1749	. .	7.8	0 47 57,49	3,085	84 14	11 59 22,33	46,27	— 5,8
1750	. .	6.7	0 48 28,21	3,087	84 36	12 22 3,14	46,30	— 3,6
1751	. .	8	0 49 49,21	3,192	69 50	12 27 18,20	47,88	. . .
1752	. .	6.7	0 50 56,67	3,191	65 47	12 44 10,00	47,87	— 4,0
1753	70	8	0 51 43,46	3,095	85 8	12 55 51,91	46,43	+ 1,5
1754	69 σ^2	5.6	0 51 54,01	3,239	59 16	12 58 30,09	48,58	— 3,9
1755	71 ε	4	0 52 34,45	3,095	83 11	13 8 36,77	46,43	— 3,7
1756	. .	8	0 53 25,01	3,091	84 19	13 21 15,13	46,36	— 5,1
1757	73	6.7	0 54 31,63	3,085	85 25	13 37 54,48	46,27	—10,0
1758	72	6	0 54 32,96	3,136	76 8	13 38 14,37	47,04	+ 17,6
1759	74 ψ^1 d	5.6	0 54 58,88	3,177	69 36	13 44 43,20	47,66	— 3,5
1760	. . d	5.6	0 54 59,75	3,177	69 36	13 44 56,31	47,66	— 3,9
1761	76 σ^2	6.7	0 55 13,20	3,251	58 54	13 48 18,01	48,77	— 5,4
1762	77	7.8	0 55 28,95	3,081	86 10	13 52 14,20	46,21	— 3,3
1763	seq.	8	0 55 31,61	3,081	86 9	13 52 54,11	46,21	— 3,7
1764	75	6	0 56 3,35	3,127	78 7	14 0 50,24	46,91	— 5,6
1765	78	6	0 56 59,19	3,255	59 3	14 14 47,84	48,83	— 0,4
1766	79 ψ^2	6	0 57 14,91	3,177	70 20	14 18 43,64	47,66	— 2,2
1767	. .	7	0 57 22,31	3,233	62 12	14 20 34,63	48,50	— 3,1
1768	80 e	5	0 58 4,69	3,086	85 25	14 31 10,37	46,29	— 3,5
1769	. .	8	0 58 38,99	3,192	68 29	14 39 44,82	47,88	— 4,3
1770	81 ψ^3	6	0 59 8,82	3,171	71 25	14 47 12,26	47,56	— 4,5
1771	. .	6	0 59 30,03	3,215	65 36	14 52 30,50	48,22	— 2,3
1772	. .	6	0 59 35,76	3,149	75 24	14 53 56,22	47,23	— 3,7
1773	82 g	5.6	1 0 7,32	3,262	59 39	15 1 49,72	48,93	— 0,8
1774	. .	8	1 0 26,39	3,111	81 31	15 6 35,81	46,67	— 2,8
1775	83 τ	6	1 0 40,71	3,254	60 59	15 10 10,62	48,80	— 5,2
1776	84 χ	5	1 0 43,66	3,181	70 2	15 10 54,96	47,71	— 2,1
1777	. .	7.8	1 1 1,23	3,117	80 46	15 15 18,44	46,75	— 3,4
1778	. .	7.8	1 2 0,55	3,257	61 0	15 30 8,32	48,86	— 4,7
1779	85 φ	6	1 2 55,19	3,217	66 29	15 43 47,87	48,25	— 6,5
1780	86 ζ^1	6	1 3 17,56	3,101	83 29	15 49 23,49	46,52	0,0
1781	ζ^2	8	1 3 18,88	3,101	83 29	15 49 43,20	46,52	+ 7,9
1782	87	6.7	1 3 31,27	3,157	74 56	15 52 49,02	47,36	— 5,6
1783	88	6.7	1 4 19,11	3,098	84 4	16 4 46,68	46,47	— 8,7
1784	89 f	6	1 7 29,63	3,076	87 26	16 52 24,43	46,15	— 7,4
1785	90 u	5.6	1 8 30,34	3,253	63 47	17 7 35,12	48,80	+ 1,5

PISCES.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in temp. ad init. anni 1800.	Praec. annua +	Dist. a polo boreo	Ascensio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Prazz.
			h ′ ″	″	° ′	° ′ ″	″	″
1786	. . .	8	1 9 3,47	3,075	87 46	17 15 52,05	46,13	— 3,5
1787	91 l	6	1 10 5,80	3,271	62 19	17 31 26,94	49,07	— 1,9
1788	. . .	7.8	1 12 24,73	3,086	86 19	18 6 11,00	46,29	— 4,3
1789	. . .	8	1 12 29,94	3,106	85 39	18 7 29,13	46,59	— 2,1
1790	92	7.8	1 13 7,05	3,190	73 14	18 16 45,82	47,85	— 8,2
1791	. . .	8	1 14 38,69	. . .	. .	18 39 40,32	. . .	. . .
1792	93 ζ²	5.6	1 15 29,81	3,201	71 52	18 52 27,16	48,01	— 6,2
1793	. . .	7	1 15 35,51	3,211	70 58	18 53 52,01	48,17	— 5,0
1794	94	5.6	1 15 54,96	3,202	71 48	18 58 44,40	48,03	+ 1,6
1795	. . .	6.7	1 16 31,15	3,322	59 4	19 7 47,32	49,83	— 3,3
1796	95	7	1 17 17,59	3,095	85 41	19 19 23,85	46,39	— 3,4
1797	. . .	7	1 17 39,56	3,187	73 58	19 24 53,41	47,81	— 1,8
1798	96	6.7	1 18 37,36	3,109	83 45	19 39 20,41	46,63	— 5,9
1799	97	6.7	1 19 6,47	3,200	72 41	19 46 37,00	48,00	— 5,5
1800	98 μ	5	1 19 42,96	3,100	84 53	19 55 44,72	46,50	— 3,2
1801	99 η	4	1 20 48,12	3,177	75 41	20 12 1,74	47,66	+ 1,4
1802	. . .	8	1 21 7,69	. . .	. .	20 16 55,50	. . .	. . .
1803	. . .	7.8	1 21 9,19	3,140	80 9	20 17 17,91	47,19	— 2,2
1804	. . .	8	1 22 20,98	. . .	. .	20 35 14,66	. . .	. . .
1805	. . .	7	1 22 49,81	3,119	82 49	20 42 27,21	46,78	— 1,7
1806	. . .	6	1 24 1,03	3,209	72 31	21 0 15,50	48,14	— 3,5
1807	100 d	6	1 24 14,94	3,157	78 28	21 3 44,12	47,36	— 0,6
1808	. .	7.8	1 24 15,94	3,157	78 28	21 3 59,14	47,36	+ 5,1
1809	. . .	8	1 24 24,11	3,120	82 45	21 6 1,71	46,81	— 1,0
1810	101	6	1 25 5,81	3,176	76 22	21 16 27,08	47,64	— 3,7
1811	. . .	6	1 25 6,76	3,202	73 36	21 16 41,33	48,03	— 2,3
1812	102 π	6	1 26 30,78	3,156	78 53	21 37 41,75	47,34	— 2,5
1813	. . .	8	1 26 31,85	. . .	. .	21 37 57,41	. . .	. . .
1814	. . .	7.8	1 27 3,21	3,156	78 57	21 45 48,12	47,34	— 6,1
1815	103	7.8	1 28 29,76	3,200	74 24	22 7 26,34	48,03	— 2,5
1816	104	6.7	1 28 33,43	3,178	76 44	22 8 21,44	47,68	+ 1,0
1817	105	6	1 28 54,53	3,198	74 37	22 13 57,92	47,98	+ 1,4
1818	. . .	7	1 30 3,33	3,129	82 15	22 30 50,01	46,94	— 0,8
1819	. . .	8	1 30 53,96	3,133	81 57	22 43 29,42	47,00	— 2,3
1820	106,	5	1 31 2,13	3,100	85 32	22 45 32,00	46,50	— 4,1
1821	107	5.6	Eadem cum 2 *Arietis*.					
1822	109	6	1 34 1,79	3,243	70 55	23 30 26,77	48,65	— 1,8
1823	110 o	5	1 34 50,82	3,137	81 51	23 42 42,30	47,05	+ 1,2
1824	. . .	8	1 37 35,45	. . .	. .	24 23 51,74	. . .	. . .
1825	. . .	8	1 41 50,41	. . .	. .	25 27 36,18	. . .	. . .

PISCES.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Aſcenſio recta media in temp. ad init. anni 1800.	Praec. annua +	Diſt. a polo boreo.	Aſcenſio recta media in part. aequat. ad init. anni 1800.	Praec. annua +	Differ. cum Piazzi.
			H ′ ″	″	° ′	° ′ ″	″	″
1826	111 ξ	5.6	1 43 12,81	3,082	87 48	25 48 12,14	46,23	— 4,6
1827	. . .	8	1 45 34,69	3,069	89 9	26 23 40,31	46,03	— 3,1
1828	. . .	6.7	1 48 44,46	3,181	78 41	27 11 6,90	47,72	— 3,3
1829	112	6	1 49 45,58	3,083	87 52	27 26 23,75	46,25	— 8,7
1830	113 α	4	1 51 42,54	3,079	88 12	27 55 38,12	46,18	— 4,2

STELLARVM ZODIACALIVM

CATALOGVS NOVVS

AD INITIVM ANNI MDCCC

CONSTRVCTVS

DECLINATIONES MEDIAS

EX OBSERVATIONIBVS

IN SPECVLA ELECTORALI MANNHEMENSI

FACTIS

EXHIBENS.

STELLARVM ZODIACALIVM
CATALOGVS NOVVS
IN
DECLINATIONE
AD INITIVM ANNI MDCCC

ARIES.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua	Differ. cum Piazzi.
			h m s	° ′ ″	″	″
1	2	5.6	1 31,7	19 18 28 N.	+ 18,43	+ 5,7
2	3	8	1 31,7	16 24 24—	+ 18,43	. . .
4	4	6.7	1 32,4	15 57 20—	+ 18,24	— 4,0
5	. . .	8	1 37,5	16 1 7—	+ 18,23	— 3,0
6	1	7	1 39,1	21 16 58—	+ 18,19	— 21,0
7	5κ	4.5	1 42,6	18 18 32—	+ 18,05	— 2,0
8	6β	3	1 43,9	19 49 31—	+ 18,00	+ 1,5
9	7	6	1 44,7	22 35 32—	+ 17,96	— 4,0
10	8ι	6	1 46,4	16 50 11—	+ 17,92	— 0,1
11	9λ	5.6	1 46,8	22 36 56—	+ 17,90	— 2,0
15	10	6.7	1 52,3	24 58 0—	+ 17,65	— 0,9
17	. . .	8	1 53,0	24 57 18—	+ 17,62	— 4,2
. .	. . .	8	. . . .	24 51 17—	. . .	. . .
18	12κ	5.6	1 55,4	21 41 23—	+ 17,52	— 4,8
19	11	6.7	1 55,5	24 44 46—	+ 17,52	— 0,3
20	13α	2.3	1 55,9	22 30 42—	+ 17,50	— 4,2
24	14	5.6	1 58,1	24 59 17—	+ 17,42	— 2,8
25	15	6	1 59,6	18 33 7—	+ 17,35	— 1,9
26	16	7	1 59,9	24 59 14—	+ 17,34	— 1,1
29	17η	5.6	2 1,6	20 15 56—	+ 17,26	— 2,0
30	18	8	2 1,8	18 52 33—	+ 17,25	— 3,0
31	19	7	2 2,2	14 20 12—	+ 17,23	— 1,7
33	20	6.7	2 4,3	24 51 8—	+ 17,14	— 18,0
34	21	7	2 4,4	24 6 38—	+ 17,14	— 3,8
. .	. . .	8	. . . .	24 39 27—	. . .	. . .

A R I E S.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h ′	° ′ ″B.	″	″
36	Δ]d	8	2 5,9	27 48 56	+ 17,07	— 3,0
37	229 x	6	2 7,0	18 58 13—	+ 17,01	— 4,0
39	239 2	8	2 8,1	18 46 1—	+ 16,97	— 6,3
. .	. . .	8	. . . .	27 48 41—	. . .	. . .
41	. . .	8	2 12,5	9 55 8—	+ 16,76	. . .
42	. . .	8	2 13,5	9 34 36—	+ 16,71	. . .
43	24 ξ	6	2 14,1	9 41 58—	+ 16,68	— 3,5
. .	. . .	8	. . . .	9 26 32—	. . .	. . .
46	. . .	7	2 16,0	9 39 33—	+ 16,59	— 4,0
47	25	7.8	2 16,8	9 18 17—	+ 16,56	— 1,5
49	26	6	2 19,5	18 57 42—	+ 16,42	— 4,0
50	27	6	2 19,8	16 48 45—	+ 16,40	+ 1,7
51	28	6	Eadem cum 26 *Flamst.*			
52	29 ω	6	2 22,0	14 8 38—	+ 16,29	— 6,0
53	. . .	7	2 22,4	17 59 30—	+ 16,27	— 3,5
55	30]d	6	2 25,5	23 40 16—	+ 16,12	— 9,1
56	31 υ	8	2 25,7	11 34 28—	+ 16,09	. . .
57	32 τ	5.6	2 27,5	21 5 24—	+ 16,00	— 3,4
59	33	6	2 29,0	26 11 46—	+ 15,93	— 4,5
60	. . .	8	2 29,2	20 17 30—	+ 15,91	. . .
62	34 μ	6	2 31,1	19 9 11—	+ 15,80	— 4,7
64	35	4	2 31,7	26 50 56—	+ 15,78	— 0,9
66	36	7	2 33,2	16 54 39—	+ 15,70	— 4,6
67	37 ο	6.7	2 33,6	14 27 30—	+ 15,68	— 2,7
68	38	5.6	2 34,1	11 35 52—	+ 15,66	— 1,0
71	39	4	2 36,0	28 24 51—	+ 15,55	— 1,4
72	40	6	2 37,3	17 26 35—	+ 15,48	+ 1,1
73	42 π	5	2 38,2	16 37 28—	+ 15,42	— 0,6
74	41	3	2 38,2	26 25 43—	+ 15,42	— 2,7
75	43 σ	6	2 40,5	14 15 28—	+ 15,29	— 24,0
76	. . .	8	2 42,1	15 39 32—	+ 15,21	. . .
77	44 ϱ 1	6.7	2 43,7	16 54 51—	+ 15,12	— 1,0
78	45 ϱ 2	6	2 44,6	17 30 49—	+ 15,07	0,0
79	46 ϱ 3	6	2 45,2	17 13 8—	+ 15,04	— 6,4
80	47	6	2 46,7	19 51 32—	+ 14,95	— 1,6
81	48 ϵ	5	2 47,8	20 31 59—	+ 14,88	— 3,7
82	. . .	8	2 48,5	17 12 16—	+ 14,84	. . .
83	50	7.8	2 49,3	17 12 12—	+ 14,79	— 4,0
84	49	6	2 50,2	25 39 47—	+ 14,74	— 4,5
85	51	7	2 50,6	25 49 19—	+ 14,72	— 4,7

TAVRVS.

Num. Catal. ZACH.	Num. Catalog. FLAMST.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum PIAZZI.
			h ′	° ′ ″	″	″
204	56	6.7	4 7,8	21 16 44 B.	+ 9,41	— 1,5
205	52 φ	6	4 8,1	26 51 36 —	+ 9,39	— 1,5
206	54 γ	3.4	4 8,4	15 8 2 —	+ 9,36	— 0,5
207	55	7.8	4 8,5	16 6 44 —	+ 9,36	+ 0,9
208	57	6	4 8,7	13 32 30 —	+ 9,34	+ 1,9
209	58 h	6	4 9,3	14 36 20 —	+ 9,30	+ 0,2
212	59 χ	6	4 10,4	25 8 41 —	+ 9,21	+ 5,7
214	60	7	4 10,8	13 35 45 —	+ 9,18	— 5,7
216	61 δ^1	4	4 11,4	17 3 41 —	+ 9,13	+ 3,9
219	62	7	4 11,9	23 49 23 —	+ 9,09	+ 3,3
220	63	6	4 12,0	16 17 56 —	+ 9,09	— 2,0
221	64 δ^2	4.5	4 12,6	16 58 6 —	+ 9,04	+ 4,8
222	66 r	5.6	4 13,0	8 59 14 —	+ 9,01	— 10,3
224	65 κ^1	5	4 13,5	21 49 26 —	+ 8,97	+ 0,5
225	67 κ^2	6.7	4 13,5	21 43 52 —	+ 8,97	— 1,2
226	68 δ^3	5	4 13,9	17 27 40 —	+ 8,93	— 6,7
227	70	7	4 14,2	15 28 17 —	+ 8,91	+ 6,0
228	69 ν^1	5	4 14,4	22 20 57 —	+ 8,90	— 5,6
229	71	5	4 15,0	15 9 8 —	+ 8,86	+ 2,5
230	73 π	5	4 15,3	14 15 2 —	+ 8,82	— 1,0
231	72 ν^2	6	4 15,4	22 32 5 —	+ 8,82	— 6,5
233	74 ε	4	4 17,0	18 43 30 —	+ 8,70	— 3,3
234	75	6	4 17,0	15 54 6 —	+ 8,70	— 3,9
235	76	7	4 17,1	14 17 15 —	+ 8,69	— 11,0
236	77 ϑ^1	5	4 17,2	15 30 28 —	+ 8,67	+ 0,5
237	78 ϑ^2	5	4 17,3	15 25 2 —	+ 8,66	— 1,4
238	79 b	6	4 17,6	12 35 54 —	+ 8,64	— 0,7
240	80	6	4 18,8	15 11 23 —	+ 8,56	+ 1,9
241	82	7.8	4 19,1	14 44 55 —	+ 8,55	+ 0,3
242	. . .	5	4 19,1	15 44 48 —	+ 8,53	+ 2,7
243	81	5.6	4 19,3	15 14 45 —	+ 8,52	+ 1,2
245	83	6	4 19,4	13 16 43 —	+ 8,50	+ 0,7
246	84	7.8	4 19,8	14 39 43 —	+ 8,48	+ 0,5
247	85	6	4 20,5	15 24 38 —	+ 8,42	+ 3,1
250	. . .	7.8	4 22,2	15 53 28 —	+ 8,29	— 5,1
251	86 ζ	5	4 22,5	14 24 47 —	+ 8,27	+ 0,8
254	87 κ	1	4 24,5	16 5 48 —	+ 8,11	— 3,3
255	88 d	5	4 24,7	9 44 20 —	+ 8,08	— 1,4
256	89	7	4 26,7	15 37 16 —	+ 7,92	+ 0,8
257	90 c^1	5	4 27,0	12 5 54 —	+ 7,90	— 1,9

TAVRVS.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Aſcenſio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h ′	° ′ ″ B.	″	″
135	16 g	5.6	3 32,9	23 39 3 —	+ 11,97	— 4,0
136	17 b	4.5	3 33,0	23 28 26 —	+ 11,97	+ 3,2
137	18 m	7	3 33,3	24 12 2 —	+ 11,96	— 2,0
138	19 e	5	3 33,3	23 49 39 —	+ 11,95	+ 6,4
139	20 c	5	3 33,9	23 43 54 —	+ 11,90	+ 2,7
140	21 k	6.7	3 34,0	23 55 15 —	+ 11,90	— 8,4
141	15 n	7	3 34,0	22 20 42 —	+ 11,95	+ 1,1
143	22 l	7.8	3 34,1	23 53 24 —	+ 11,89	+ 9,5
144	23 d	5	3 34,5	23 18 53 —	+ 11,86	+ 4,7
145	29 u^1	6	3 35,1	5 24 57 —	+ 11,83	— 7,3
146	24 p	7	3 35,5	23 29 9 —	+ 11,80	+ 1,5
148	25 η	3	3 35,6	23 28 33 —	+ 11,79	+ 4,9
150	26 s	7.8	3 37,1	23 13 44 —	+ 11,68	+ 19,8
151	27 f	4.5	3 37,3	23 25 51 —	+ 11,67	+ 2,2
. .	. . .	8	. . . .	23 25 52 —	. . .	. . .
152	30 e.	6	3 37,3	10 31 6 —	+ 11,67	— 1,1
153	28 h	5.6	3 37,3	23 30 54 —	+ 11,67	— 2,2
159	31 u^2	6	3 41,4	5 55 30 —	+ 11,38	— 1,2
161	32	6	3 45,1	21 53 11 —	+ 11,11	+ 17,0
162	33	6.7	3 45,2	22 34 45 —	+ 11,10	+ 15,0
169	34	. .	Eſt Uranus			
170	35 λ	4	3 49,6	11 54 51 —	+ 10,77	+ 3,0
172	36	6.7	3 52,4	23 32 24 —	+ 10,57	+ 15,0
173	38	5	3 52,5	5 25 27 —	+ 10,56	+ 2,6
174	37 A	5	3 52,9	21 31 27 —	+ 10,53	— 1,2
176	40	6.7	3 53,2	4 52 22 —	+ 10,52	+ 3,2
177	39	6.7	3 53,5	21 27 27 —	+ 10,49	+ 3,6
178	41	6	3 54,4	27 2 57 —	+ 10,43	— 0,6
180	42 ψ	5.6	3 54,7	28 26 57 —	+ 10,40	— 0,6
183	43 ω^2	6	3 57,5	19 4 12 —	+ 10,19	— 0,3
186	44 p	6.7	3 58,7	25 56 53 —	+ 10,10	— 3,0
188	45	6.7	4 0,7	4 59 28 —	+ 9,95	+ 3,1
191	46	6	4 2,8	7 11 41 —	+ 9,80	+ 3,1
193	47	5.6	4 3,1	8 44 47 —	+ 9,77	— 0,3
195	48	6	4 4,4	14 53 22 —	+ 9,67	+ 1,7
196	49 μ	5	4 4,7	8 22 50 —	+ 9,65	+ 0,1
199	50 ω^2	5.6	4 5,6	20 4 29 —	+ 9,58	+ 1,0
201	51	6.7	4 6,6	21 4 42 —	+ 9,51	+ 1,0
203	53	6.7	4 7,7	20 38 53 —	+ 9,42	— 6,0
. . .	. . .	8	. . . .	20 43 50 —	. . .	. . .

TAVRVS.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Aſcenſio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h ′ ″	° ′ ″	″	″
315	112β	2	5 13,7	28 25 31 B.	+ 4,09	+ 4,3
316	113	7	5 14,5	16 30 31—	+ 3,95	. . .
317	115	5.6	5 15,5	17 46 37—	+ 3,86	+ 3,1
318	114o	5	5 15,6	21 45 12—	+ 3,85	+ 1,1
320	116	5.6	5 16,3	15 41 32—	+ 3,79	+ 4,2
321	117	6	5 16,4	17 3 34—	+ 3,78	+ 2,7
322	118	6.7	5 17,0	24 58 24—	+ 3,73	+ 2,7
323	. . .	8	5 17,6	18 4 55—	+ 3,68	. . .
324	. . .	8	5 18,1	18 11 23—	+ 3,64	. . .
328	119	5.6	5 20,5	18 25 57—	+ 3,43	— 1,1
329	. . .	6.7	5 21,8	20 19 9—	+ 3,31	0,0
330	120	6	5 21,8	18 23 4—	+ 3,31	+ 3,4
332	. . .	8	5 22,8	24 8 29—	+ 3,23	. . .
333	121	6	5 23,2	23 53 35—	+ 3,20	— 2,0
337	122	6	5 25,5	16 54 14—	+ 3,00	— 1,3
338	123 ζ	3.4	5 25,7	21 0 25—	+ 2,98	+ 2,0
339	124] d	8	5 27,0	23 8 25—	+ 2,87	. . .
341	125	6	5 27,5	25 46 17—	+ 2,84	— 0,3
342	. . .	8	5 24,4	21 39 11—	+ 3,13	. . .
344	. . .	8	5 28,7	16 16 46—	+ 2,72	. . .
345	126	6	5 29,7	16 25 3 —	+ 2,63	+ 0,4
347	127	8	5 31,1	18 52 14—	+ 2,52	+ 2,0
348	seq.	8	5 31,5	18 53 37—	+ 2,47	. . .
350	128	6	5 33,4	15 59 10—	+ 2,31	+ 6,0
351	. . .	7.8	5 33,5	18 36 20—	+ 2,31	— 5,6
353	129	7	5 35,3	15 43 51—	+ 2,16	+ 5,5
354	. . .	7.8	5 35,7	24 36 4—	+ 2,12	— 6,0
356	130	6	5 35,8	17 38 25—	+ 2,11	+ 3,8
357	131	6	5 35,8	14 24 8—	+ 2,11	— 0,9
358	133	6	5 36,4	13 48 51—	+ 2,06	+ 0,6
360	132	5	5 36,7	24 29 13—	+ 2,03	— 0,1
361	134	5.6	5 38,3	12 34 31—	+ 1,89	+ 2,7
363	135	6	5 39,1	14 14 5—	+ 1,82	+ 5,5
364	. . .	8	5 39,4	14 22 23—	+ 1,79	. . .
365	. . .	8	5 39,5	13 58 34—	+ 1,79	. . .
367	136	4.5	5 40,8	27 33 2—	+ 1,67	0,0
. .	. . .	8	. . . .	14 10 13—	. . .	. . .
368	137	5.6	5 41,0	14 6 31—	+ 1,66	+ 3,8
. .	138	8	. . . .	13 54 23—	. . .	. . .
. .	. . .	8	. . . .	14 1 21—	. . .	. . .

TAVRVS.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h m s	° ′ ″	″	″
258	91 σ^1	5.6	4 27,7	15 23 44 B.	+ 7,80	— 5,0
259	92 σ^2	5.6	4 27,8	15 30 39 —	+ 7,80	— 1,0
262	93 c^2	6	4 28,9	11 47 39 —	+ 7,76	— 0,5
263	94 τ } d	8	4 30,2	22 32 40 —	+ 7,65	+ 7,6
264	. . }	5	4 30,3	22 33 58 —	+ 7,65	+ 2,0
265	95	7	4 31,1	23 41 53 —	+ 7,57	— 2,4
272	96	6.7	4 38,3	15 32 34 —	+ 7,00	+ 4,5
273	97 i	5.6	4 39,7	18 29 11 —	+ 6,87	+ 5,2
274	40 ^{1} Or.	5.6	4 41,2	13 54 20 —	+ 6,75	+ 1,0
277	. . .	8	4 43,7	14 16 43 —	+ 6,54	. . .
280	. . .	7	4 45,7	23 37 23 —	+ 6,37	— 0,5
281	. . .	6.7	4 45,8	16 49 36 —	+ 6,36	+ 3,2
282	98 k	6	4 45,9	24 43 41 —	+ 6,35	+ 3,0
. .	99	8	4 46,3	23 15 2 —	+ 6,31	. . .
. .	100	8	. . . .	16 7 10 —	. . .	. . .
284	101	6	4 48,3	15 36 12 —	+ 6,16	+ 2,0
285	. . .	8	4 50,2	20 59 2 —	+ 6,00	. . .
286	102 ι	4.5	4 51,2	21 17 27 —	+ 5,92	+ 4,0
287	. . } d	8	4 52,4	21 20 58 —	+ 5,82	. . .
288	. . }	7	4 52,5	20 59 0 —	+ 5,82	+ 2,0
289	11 γ^1 Or.	5	4 53,2	15 6 41 —	+ 5,74	+ 11,7
292	. . .	8	4 55,6	26 13 29 —	+ 5,55	. . .
293	104 m	5	4 55,6	18 21 44 —	+ 5,55	+ 6,2
294	103	6	4 55,9	23 59 14 —	+ 5,51	+ 1,4
295	105	6	4 56,0	21 25 37 —	+ 5,51	+ 1,0
296	106 l^1	5.6	4 56,0	20 8 30 —	+ 5,51	+ 3,5
297	107 l^2	7	4 57,0	19 35 14 —	+ 5,42	— 1,9
299	. . .	8	5 0,0	26 12 18 —	+ 5,18	. . .
300	Orion.	6.7	5 0,2	15 47 6 —	+ 5,16	+ 3,0
. .	. . .	8	. . . .	21 33 51 —	. . .	. . .
301	108	7	5 3,5	22 2 33 —	+ 4,89	+ 0,1
304	. . .	8	5 5,7	19 54 18 —	+ 4,70	. . .
305	109 n	5.6	5 7,3	21 52 33 —	+ 4,56	+ 1,5
306	. . .	7	5 7,4	19 54 41 —	+ 4,55	+ 0,4
307	. . .	7	5 8,5	19 21 35 —	+ 4,46	0,0
308	. . .	7.8	5 9,1	19 35 53 —	+ 4,40	+ 0,8
309	. . .	8	5 10,4	19 40 53 —	+ 4,30	. . .
310	. . .	8	5 10,9	11 59 7 —	+ 4,26	. . .
311	110	6.7	5 12,1	16 29 48 —	+ 4,15	+ 1,1
314	111	6	5 12,8	17 11 3 —	+ 4,09	+ 3,9

TAURUS.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Aſcenſio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h m s	° ′ ″	″	″
315	112β	2	5 13,7	28 25 31 B.	+ 4,09	+ 4,3
316	113	7	5 14,5	16 30 31—	+ 3,95	. . .
317	115	5.6	5 15,5	17 46 37—	+ 3,86	+ 3,1
318	114 o	5	5 15,6	21 45 12—	+ 3,85	+ 1,1
320	116	5.6	5 16,3	15 41 32—	+ 3,79	+ 4,2
321	117	6	5 16,4	17 3 34—	+ 3,78	+ 2,7
322	118	6.7	5 17,0	24 58 24—	+ 3,73	+ 2,7
323	. . .	8	5 17,6	18 4 55—	+ 3,68	. . .
324	. . .	8	5 18,1	18 11 23—	+ 3,64	. . .
328	119	5.6	5 20,5	18 25 57—	+ 3,43	— 1,1
329	. . .	6.7	5 21,8	20 19 9—	+ 3,31	0,0
330	120	6	5 21,8	18 23 4—	+ 3,31	+ 3,4
332	. . .	8	5 22,8	24 8 29—	+ 3,23	. . .
333	121	6	5 23,2	23 53 35—	+ 3,20	— 2,0
337	122	6	5 25,5	16 54 14—	+ 3,00	— 1,3
338	123 ζ	3.4	5 25,7	21 0 25—	+ 2,98	+ 2,0
339	124] d	8	5 27,0	23 8 25—	+ 2,87	. . .
341	125	6	5 27,5	25 46 17—	+ 2,84	— 0,3
342	. . .	8	5 24,4	21 39 11—	+ 3,13	. . .
344	. . .	8	5 28,7	16 16 46—	+ 2,72	. . .
345	126	6	5 29,7	16 25 3 —	+ 2,63	+ 0,4
347	127	8	5 31,1	18 52 14—	+ 2,52	+ 2,0
348	seq.	8	5 31,5	18 53 37—	+ 2,47	. . .
350	128	6	5 33,4	15 59 10—	+ 2,31	+ 6,0
351	. . .	7.8	5 33,5	18 36 20—	+ 2,31	— 5,6
353	129	7	5 35,3	15 43 51—	+ 2,16	+ 5,5
354	. . .	7.8	5 35,7	24 36 4—	+ 2,12	— 6,0
356	130	6	5 35,8	17 38 25—	+ 2,11	+ 3,8
357	131	6	5 35,8	14 24 8—	+ 2,11	— 0,9
358	133	6	5 36,4	13 48 51—	+ 2,06	+ 0,6
360	132	5	5 36,7	24 29 13—	+ 2,03	— 0,1
361	134	5.6	5 38,3	12 34 31—	+ 1,89	+ 2,7
363	135	6	5 39,1	14 14 5—	+ 1,82	+ 5,5
364	. . .	8	5 39,4	14 22 23—	+ 1,79	. . .
365	. . .	8	5 39,5	13 58 34—	+ 1,79	. . .
367	136	4.5	5 40,8	27 33 2—	+ 1,67	0,0
. .	. . .	8	. . . .	14 10 13—	. . .	. . .
368	137	5.6	5 41,0	14 6 31—	+ 1,66	+ 3,8
. .	138	8	. . . .	13 54 23—	. . .	. . .
. .	. . .	8	. . . .	14 1 21—	. . .	. . .

TAVRVS.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h m s	° ′ ″	″	″
370	. . .	8	5 44,7	24 12 22 B.	+ 1,34	. . .
372	139	5.6	5 45,6	25 54 57 —	+ 1,25	— 0,2
375	. . .	8	5 46,3	24 34 19 —	+ 1,20	. . .
376	. . .	8	5 48.0	13 40 13 —	+ 1,05	. . .
377	140	6	5 48,3	22 52 27 —	+ 1,02	+ 2,2
. .	. . .	8	. . . .	24 45 51 —	. . .	. . .
378	141	6	5 49,6	22 22 52 —	+ 0,91	+ 5,0

GEMINI.

			h m s	° ′ ″	″	″
381	1 h	5	5 52.0	23 15 41 B	+ 0,70	+ 0,3
383	2	6.7	5 54,6	23 38 32 —	+ 0,46	+ 7,3
384	3	6.7	5 57,6	23 7 53 —	+ 0,21	+ 3,0
385	4	7	5 58,4	23 1 9 —	+ 0,14	+ 5,2
386	5	7	5 59,3	24 27 0 —	+ 0,07	+ 1,1
387	6	6.7	6 0,2	22 56 21 —	— 0,01	+ 3,0
388	7 η	4.5	6 2,8	22 33 6 —	— 0,24	— 0,6
391	8] d	7	6 4,1	24 1 12 —	— 0,36	+ 3,8
392	9	7	6 4,8	23 47 37 —	— 0,41	+ 3,6
394	10	7	6 6,7	23 39 58 —	— 0,57	+ 0,8
395	11	7	6 7,1	23 32 3 —	— 0,62	+ 1,4
396	12	8	6 7,2	23 20 24 —	— 0,63	— 1,2
401	13 μ	3	6 10,9	22 36 13 —	— 0,94	— 3,3
405	14	7	6 13,7	21 44 30 —	— 1,20	+ 2,6
407	15] d	6.7	6 15,9	20 53 53 —	— 1,38	+ 2 0
408	16	6	6 16,0	20 56 11 —	— 1,40	+ 2,5
409	18 ι	5	6 17,1	20 19 33 —	— 1,50	— 0,6
410	17	7	6 17,2	20 53 47 —	— 1,51	. . .
414	19 seq.	6.7	6 20,1	16 1 46 —	— 1,75	+ 6,3
415	20	7	6 20,6	17 54 25 —	— 1,80	— 0,8
416	21	6.7	6 20,6	17 54 42 —	— 1,80	+ 0,7
418	22	7.8	6 22,8	19 34 10 —	— 1,98	+ 1,2
420	23	7.8	6 24,5	16 56 44 —	— 2,13	+ 0,8
422	24 γ	3	6 26,2	16 33 23 —	— 2,28	+ 3,7
425	25	7.8	6 28,7	28 22 0 —	— 2,50	— 0,5
426	26	5.6	6 30,8	17 49 40 —	— 2,68	+ 0,3
427	27 ε	3	6 31,6	25 18 55 —	— 2,75	0,0
428	28	6	6 32,1	29 9 33 —	— 2,79	+ 1,0
. .	Eadem cum 28 *Flamst.*			29 9 53 —	. . .	. . .
429	30 ξ[1]	5.6	6 32,7	13 25 2 —	— 2,85	— 0,3

GEMINI.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h ′	° ′ ″	″	″
430	31 ξ²	4	6 34,1	13 5 56B.	— 2,96	+ 4,0
431	32	8	6 34,7	12 53 21—	— 3,01	— 0,7
432	33	8	6 38,3	16 25 1—	— 3,33	+ 1,0
433	35	6	6 39,1	13 37 49—	— 3,39	+ 2,4
434	36 d	8	6 39,6	21 59 3—	— 3,43	+ 3,0
435	34 ϑ	4	6 39,6	34 11 14—	— 3,43	— 1,0
436	37	6	6 43,0	25 36 43—	— 3,73	+ 2,3
437	38 e	5.6	6 43,4	15 25 16—	— 3,76	— 7,0
440	39	6.7	6 46,5	26 19 48—	— 4,04	+ 1,8
442	40	6	6 47,1	26 10 21—	— 4,08	— 1,6
443	41	7	6 48,4	16 20 30—	— 4,19	. . .
446	42 α^1	6	6 50,2	24 29 16—	— 4,36	+ 1,8
448	43 ζ	4	6 52,2	20 51 4—	— 4,52	+ 2,2
450	44 α^2	6.7	6 53,3	22 55 25—	— 4,61	+ 0,3
452	45 o	6	6 56,9	16 14 17—	— 4,58	+ 4,0
453	46 τ	5	6 58,4	30 33 39—	— 4,71	— 4,8
454	47	7	6 59,0	27 10 19—	— 4,75	+ 3,4
456	48 m	6	7 0,3	24 27 0—	— 5,20	+ 0,2
457	49	7	7 0,5	26 4 12—	— 5,22	— 1,6
458	50	7	7 1,4	15 30 6—	— 5,30	— 2,5
459	51	5	7 1,9	16 29 9—	— 5,35	+ 1,4
460	52 n	6	7 2,5	25 13 12—	— 5,40	— 4,3
461	53	6	7 3,4	28 13 57—	— 5,49	— 1,8
464	54 λ	4.5	7 6,6	16 53 19—	— 5,74	+ 0,3
465	55 δ	3.4	7 8,2	22 20 14—	— 5,95	+ 4,1
466	56 q	5.6	7 10,1	20 48 30—	— 6,02	+ 5,8
467	57 A	6	7 11,3	25 25 18—	— 6,12	+ 0,7
468	58	7	7 11,4	23 19 5—	— 6,14	— 3,6
469	59	7.8	7 12,1	28 0 42—	— 6,19	— 3,2
470	60 i	4	7 13,3	28 10 58—	— 6,28	+ 1,3
473	61 r	7	7 15,1	20 38 40—	— 6,45	+ 0,5
474	63 p	6	7 15,9	21 50 49—	— 6,49	— 20,0
475	62 s	5	7 16,2	32 10 6—	— 6,53	— 0,3
476	64 b^1	5.6	7 16,9	28 31 4—	— 6,58	— 3,2
477	65 b^2	5.6	7 17,4	28 18 57—	— 6,62	+ 1.0
480	66 κ	2	7 21,8	32 19 7—	— 6,99	— 21,2
481	67	7	7 22,0	16 3 23—	— 7,01	+ 1,2
482	68 k	5	7 22,2	16 14 43—	— 7,02	— 0,3
483	69 v	5	7 23,6	27 19 41—	— 7,14	+ 0,2
484	73	8	7 25,4	28 16 14—	— 7,28	. . .

G E M I N I.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua	Differ. cum Piazzi.
			H ′	° ′ ″	″	″
485	70	6	7 25,4	35 28 57 B.	— 7,27	— 1,4
487	71 o	6	7 26,1	35 1 46 —	— 7,34	+ 0,7
. .	72	6	7 27,0	28 28 9 —	— 7,41	. . .
490	. . .	7.8	7 27,1	24 39 53 —	— 7,43	— 3,9
491	74 f	6	7 27,9	18 7 4 —	— 7,48	+ 1,4
493	75 σ	6	7 30,8	29 21 18 —	— 7,59	+ 2,7
495	76 c	6	7 31,9	26 14 54 —	— 7,81	+ 1,1
496	77 κ	4	7 32,4	24 51 55 —	— 7,84	+ 0,2
497	78 β	2	7 33,1	28 29 50 —	— 7,89	— 1,5
498	79	7	7 33,4	20 47 5 —	— 7,92	— 2,1
499	81 g	6	7 34,5	18 59 13 —	— 8,01	— 2,1
500	80 π	5.6	7 34,6	33 53 35 —	— 8,01	+ 1,3
501	82	6	7 36,6	23 37 25 —	— 8,18	+ 3,2
503	84	7.8	7 41,1	22 50 23 —	— 8,54	— 7,0
504	83 φ	5	7 41,2	27 16 17 —	— 8,55	— 2,0
505	85 l	6	7 44,0	20 24 2 —	— 8,77	+ 0,6

C A N C E R.

			H ′	° ′ ″	″	″
506	1	6	7 45,6	16 18 48 B.	— 8,89	+ 4,6
509	2 ω¹	6	7 48,8	25 55 44 —	— 9,14	— 0,9
511	3	6	7 49,3	17 50 40 —	— 9,16	+ 5,1
512	4 ω²	6.7	7 49,6	25 37 43 —	— 9,20	— 1,9
513	5	6	7 50,1	16 59 47 —	— 9,24	+ 0,7
514	6	5.6	7 51,2	28 20 35 —	— 9,33	+ 0,7
515	7	7.8	7 52,0	22 37 1 —	— 9,39	+ 10,0
516	8	6	7 53,9	13 40 23 —	— 9,53	+ 21,5
518	9 μ¹	6	7 54,4	23 11 41 —	— 9,57	+ 2,6
519	10 μ²	6.7	7 56,0	22 9 3 —	— 9,69	+ 2,0
520	11	6.7	7 56,6	28 3 1 —	— 9,74	+ 2,4
521	12	6	7 57,5	14 12 43 —	— 9,81	+ 3,0
522	13 ψ¹	6	7 58,1	26 25 19 —	— 9,86	+ 1,7
523	14 ψ²	7	7 58,4	26 6 14 —	— 9,88	— 4,0
526	15 ψ³	5.6	8 0,7	30 14 40 —	— 10,02	— 1,0
527	16 ζ	5.6	8 0,7	18 14 25 —	— 10,02	— 1,7
529	17 β	4	8 5,7	9 47 30 —	— 10,43	+ 1,4
531	18 χ	6	8 7,9	27 51 17 —	— 10,59	— 1,0
532	19 λ	6	8 8,6	24 58 22 —	— 10,65	+ 7,3
534	20 d¹	6	8 11,9	18 57 48 —	— 10,89	+ 0,8

CANCER.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h ′	° ′ ″ B.	″	″
535	21	7	8 13,0	11 16 1	— 10,97	+ 1,9
536	22 φ¹	6.7	8 14,3	28 32 36	— 11,07	— 8,0
537	25 d²	6	8 14,5	17 41 41	— 11,09	+ 1,4
538	23 φ²	6	8 14,7	27 34 39	— 11,10	— 3,3
539	24 υ¹	7	8 14,7	25 10 55	— 11,11	— 5,0
. .	. . .	7	. . . .	26 33 29	. . .	. . .
540	27	8	8 15,7	13 18 22	— 11,16	. . .
541	28 υ²	7	8 16,7	24 47 56	— 11,24	— 3,0
542	29	6	8 17,4	14 51 45	— 11,30	+ 5,6
545	30 υ³	6	8 19,7	24 44 44	— 11,45	— 2,0
546	31 ϑ	5.6	8 20,2	18 45 39	— 11,49	— 1,6
548	33 η	6	8 21,1	21 6 42	— 11,56	— 4,2
549	32 υ⁴	7.8	8 21,2	24 45 20	— 11,56	— 4,0
550	34	6.7	8 21,8	10 44 6	— 11,61	— 0,8
552	35	7.8	8 23,8	20 16 5	— 11,75	— 0,5
555	36 c¹	6.7	8 26,2	10 20 26	— 11,93	+ 2,6
557	37 c²	7.8	8 27,2	10 15 50	— 11,99	+ 1,5
558	. . .	8	8 27,5	20 38 59	— 12,01	. . .
559	38 o	7	8 28,2	20 28 28	— 12,05	— 7,7
560	39	6	8 28,6	20 42 17	— 12,08	— 2,8
561	40	6	8 28,7	20 40 12	— 12,09	— 9,1
563	41 ε	7	8 29,0	20 14 36	— 12,11	— 1,5
564	42 e	7.8	8 29,2	20 25 9	— 12,12	— 7,2
567	43 γ	5.6	8 31,7	22 10 42	— 12,29	— 0,8
568	44	8	8 31,7	18 52 51	— 12,29	— 23,4
569	45 A¹	6.7	8 32,2	13 23 22	— 12,33	— 2,0
570	46	6	8 33,1	31 24 44	— 12,39	— 2,5
571	47 δ	4.5	8 33,3	18 52 52	— 12,41	— 2,3
572	49 b	6.7	8 33,9	10 47 49	— 12,46	— 1,1
574	48 ι	4.5	8 34,6	29 28 55	— 12,51	— 1,4
575	50 A²	6	8 36,0	12 50 7	— 12,59	+ 3,2
577	54	6.7	8 39,9	16 5 2	— 12,85	+ 1,9
578	52	7.8	8 40,0	16 44 10	— 12,86	+ 0,6
579	51 σ¹	6	8 40,2	33 12 48	— 12,87	+ 0,4
580	53 ζ¹	7	8 40,4	29 0 0	— 12,89	+ 1,5
581	55 ζ²	6.7	8 40,7	29 5 6	— 12,90	— 2,1
. .	56 ζ³	7	8 41,8	29 5 13	— 12,98	. . .
582	57 ι²	5.6	8 42,0	31 19 38	— 13,00	— 1,4
584	58 ζ⁴	6	8 43,7	28 40 54	— 13,11	— 1,7
585	59 σ²	5.6	8 44,6	33 40 13	— 13,16	— 2,1

CANCER.

Num. Catal. ZACH.	Num. Catalog. FLAMST.	Ordo mgn.	Aſcenſio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum PIAZZI.
			h ′	° ′ ″	″	″
587	60 α^1	6	8 45,0	12 22 58 B.	— 13,18	— 4,9
588	61	6	8 45,8	30 59 33 —	— 13,23	— 0,1
590	62 o^2	6	8 46,1	16 4 52 —	— 13,26	— 2,7
591	63 o^2	6	8 46,4	16 20 27 —	— 13,28	— 6,1
592	64 σ^3	6	8 47,2	33 11 31 —	— 13,34	— 25,4
593	65 α^2	4	8 47,5	12 37 26 —	— 13,36	— 3,3
596	66 σ^4	6	8 49,1	33 1 24 —	— 13,45	+ 0,2
597	67 ζ^3	7	8 49,9	28 40 53 —	— 13,50	+ 3,1
598	68	7.8	8 50,5	17 51 28 —	— 13,55	— 2,1
599	69	6	8 51,0	25 15 52 —	— 13,59	— 0,7
600	70 ζ^6	6.7	8 52,2	28 40 59 —	— 13,66	— 4,8
601	. . .	8	8 52,3	20 45 34 —	— 13,67	. . .
603	71	7.8	8 54,5	18 10 46 —	— 13,80	— 2,2
604	73	7	8 55,9	16 4 5 —	— 13,85	— 6,0
605	72 τ	6	8 56,0	30 26 55 —	— 13,90	+ 1,6
606	. . .	8	8 56,7	15 30 34 —	— 13,94	. . .
607	76 $\varkappa$	5.6	8 56,9	11 27 58 —	— 13,95	— 4,5
608	75	6.7	8 57,0	27 26 58 —	— 13,96	— 4,6
. .	74	7	8 57,0	15 15 30 —	— 13,96	. . .
610	78	6.7	8 57,8	18 16 22 —	— 14,01	— 1,1
611	77 ξ	5.6	8 57,8	22 50 48 —	— 14,01	— 1,9
612	79	6	8 58,8	22 48 14 —	— 14,08	— 13,2
614	80	7.8	9 0,7	18 51 18 —	— 14,19	+ 0,5
615	81 π	6.7	9 1,3	15 47 38 —	— 14,23	+ 1,1
616	82	6	9 4,2	15 45 45 —	— 14,40	+ 3,3
618	83	6	9 7,8	18 32 45 —	— 14,62	+ 0,6

LEO.

			h ′	° ′ ″	″	″
624	1 $\varkappa$	5	9 15,0	27 2 11 B.	— 14,92	— 2,7
626	2 ν	6	9 17,7	9 55 11 —	— 15,20	+ 5,9
627	3	6.7	9 17,8	9 3 18 —	— 15,21	— 3,1
628	4 λ	4.5	9 20,3	23 50 35 —	— 15,34	+ 1,4
629	5 ξ	5	9 21,2	12 10 45 —	— 15,39	— 0,2
630	6 h	6	9 21,2	10 35 30 —	— 15,39	— 2,4
632	7	6.7	9 24,9	15 15 59 —	— 15,60	— 1,6
633	8	6.7	9 26,0	17 19 37 —	— 15,66	+ 3,2
634	9	6	9 26,4	25 33 46 —	— 15,69	— 0,4
635	10	5.6	9 26,6	7 43 34 —	— 15,70	+ 2,0

L E O.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h ′	° ′ ″	″	″
636	11	6.7	9 27,1	15 14 40 B.	— 15,72	+ 0,1
638	12	6.7	9 27,7	26 15 36—	— 15,75	+ 7,8
640	13	6	9 30,1	26 48 58—	— 15,88	+ 2,2
641	14 o	4	9 30,5	10 47 47—	— 15,90	— 2,9
642	15 f	6	9 31,8	30 53 12—	— 15,97	+ 89,5
644	16 ψ	6	9 32,8	14 55 49—	— 16,02	+ 1,2
645	17 e	3	9 34,5	24 41 17—	— 16,10	+ 3,3
646	18	6	9 35,6	12 43 32—	— 16,16	— 1,2
648	19	7	9 36,7	12 29 15—	— 16,22	+ 0,6
649	20	6.7	9 38,6	22 6 16—	— 16,31	— 2,4
650	21	7.8	9 40,0	12 46 14—	— 16,39	— 0,6
651	23	7.8	9 40,2	13 59 50—	— 16,40	— 6,3
652	22 g	6	9 40,5	25 20 11—	— 16,42	— 5,1
655	24 μ	4	9 41,4	26 56 55—	— 16,46	— 1,7
. .	25	8	9 47,2	12 16 9—	— 16,73	. . .
656	26	7.8	9 47,3	16 10 7—	— 16,75	+ 7,1
657	27 ι	5.6	9 47.4	13 23 36—	— 16,75	+ 1,2
. .	28	7	9 49,4	9 15 18—	— 16,84	. . .
661	29 π	4.5	9 49,6	8 59 55—	— 16,85	+ 0,3
666	30 η	3-4	9 56,4	17 43 55—	— 17,17	+ 3,9
667	31 A	4.5	9 57,3	10 58 22—	— 17,21	+ 1,1
668	32 κ	1	9 57,7	12 56 24—	— 17,23	— 1,2
669	16Sext.	6	9 58,8	7 8 51—	— 17,27	+ 0,6
671	33	7.8	9 59,9	16 41 17—	— 17,33	— 4,4
672	34	6	10 0,9	14 20 14—	— 17,38	— 5,2
676	35	6.7	10 5,4	24 29 30—	— 17,56	+ 2,0
677	36 ζ	4.5	10 5,5	24 24 32—	— 17,56	+ 0,8
678	37	6	10 5,9	14 43 18—	— 17,58	+ 1,9
679	39	6	10 6,2	24 6 18—	— 17,59	— 2,4
683	40	6	10 8.8	20 28 53—	— 17,70	+ 2,0
684	41 γ	2	10 8,9	20 50 56—	— 17,70	1,5
685	42	6	10 11,1	15 58 47—	— 17,79	+ 3,9
687	43	6	10 12,5	7 33 16—	— 17,85	+ 2,5
689	44	6	10 14,7	9 47 51—	— 17,93	+ 2,4
691	45	6	10 17 1	10 46 36—	— 18,03	+ 7,3
694	46 i	6	10 21,5	15 9 34—	— 18,18	+ 6,5
695	47 ε	4	10 22,3	19 19 57—	— 18,21	+ 1,9
697	48	5.6	10 24,4	7 58 37—	— 18,29	+ 13,3
698	49	6	10 24,5	9 40 51—	— 18,29	— 0,6
701	50	6.7	10 28,2	17 9 53—	— 18,42	+ 4,8

L E O.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media a initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h ′	° ′ ″	″	″
. .	. . .	8	. . . .	11 46 53B.	. . .	. . .
706	51 m	6	10 35,6	19 56 36—	— 18,67	— 0,9
707	52 k	6	10 35,8	15 14 51—	— 18,67	+ 2,1
708	53 l^a	6	10 38,7	11 36 2—	— 18,76	+ 2,3
710	54	4.5	10 44,8	25 48 49—	— 18,94	+ 1,3
711	55	6	10 45,4	1 48 1—	— 18,96	+ 3,0
713	56	6	10 45,6	7 15 4—	— 18,96	— 0,6
714	57	6	10 45,9	1 29 59—	— 18,97	— 6,9
717	58 d	5	10 50,2	4 41 22—	— 19,10	+ 4,4
719	59 c	5.6	10 50,4	7 10 27—	— 19,10	— 0,7
720	61	5.6	10 51,6	1 24 31A.	+ 19,12	+ 4,0
721	60 b	5	10 51,6	21 15 4B.	— 19,12	+ 2,2
. .	. . .	8	. . . .	1 12 52A.	. . .	. . .
722	62 g	6	10 53,4	1 4 33B.	— 19,17	— 4,9
724	63 χ	4.5	10 54,7	8 24 59—	— 19,21	— 2,6
725	65 p	5.6	10 56,7	3 2 31—	— 19,24	— 6,8
726	64	6.7	10 56,9	24 24 10—	— 19,25	+ 2,3
727	67	6	10 58,1	25 44 20—	— 19,28	+ 1,1
731	66	6.7	10 59,0	0 15 8A.	+ 19,30	— 3,5
735	68 δ	3	11 3,4	21 37 5B.	— 19,41	— 0,5
736	69 s	5.6	11 3,5	1 0 1—	— 19,41	+ 2,0
738	70 ϑ	3	11 3,7	16 31 15—	— 19,41	— 2,0
. .	. . .	7	11 4,5	28 32 5—	— 19,43	. . .
740	72	5.6	11 4,5	24 11 1—	— 19,43	+ 2,0
741	73 n	5.6	11 5,4	14 23 42—	— 19,44	+ 11,0
743	74 φ	5	11 6,5	2 33 36A.	+ 19,46	— 2,0
744	75 q	5.6	11 7,0	3 6 34B.	— 19,47	0,0
747	76	6	11 8,6	2 44 43—	— 19,50	+ 2,0
748	77 σ	4	11 10,8	7 7 26—	— 19,54	+ 1,0
752	78 i	4	11 13,5	11 37 50—	— 19,60	0,0
753	79 r	5.6	11 13,8	2 30 16—	— 19,60	+ 4,6
757	81	6	11 15,2	17 33 19—	— 19,63	+ 3,1
758	82	7	11 15,4	4 24 11—	— 19,63	+ 1,0
759	80	7	11 15,6	4 57 39—	— 19,64	. . .
760	83	7.8	11 16,6	4 6 10—	— 19,65	+ 1,0
763	84 τ	4	11 17,6	3 57 29—	— 19,67	— 4,0
768	85	6	11 19,3	16 31 2—	— 19,70	+ 1,0
770	86	6	11 20,0	19 30 38—	— 19,71	+ 2,0
771	87 e	4.5	11 20,1	1 54 4A.	+ 19,71	— 6,2
773	88	6	11 21,4	15 28 46B.	— 19,73	— 3,0

L E O.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h ′ ″	° ′ ″	″	″
775	89	6	11 24,1	4 10 4 B.	— 19,76	+ 13,0
776	90	6	11 24,3	17 54 9 —	— 19,77	+ 1,0
778	91 υ	4.5	11 26,7	0 16 51 —	— 19,80	+ 1,5
781	92	5.6	11 30,4	22 27 44 —	— 19,84	+ 6,7
786	93	4	11 37,7	21 19 46 —	— 19,91	+ 4,6
788	94 β	1.2	11 38,8	15 41 28 —	— 19,93	— 2,1
. .	. . .	7	. . . .	16 57 56 —	. . .	. . .
790	o 2	7.8	11 42,5	16 33 12 —	— 19,95	— 0,8
791	95 o 3	5.6	11 45,4	16 45 34 —	— 19,97	+ 6,0

V I R G O.

			h ′ ″	° ′ ″	″	″
796	1 ω	6.7	11 28,1	9 14 33 B.	— 19,82	— 2,9
800	2 ξ 1	5	11 35,0	9 22 17 —	— 19,89	— 3,0
801	3 ι	4.5	11 35,6	7 39 6 —	— 19,90	— 0,8
802	4 ξ 2	5.6	11 37,6	9 21 28 —	— 19,91	— 2,0
803	5 β	3	11 40,3	2 53 25 —	— 19,94	+ 6,3
. .	. . .	8	. . . .	0 33 37 —	. . .	. . .
807	6 A	6	11 44,8	9 33 29 —	— 19,97	— 6,0
. .	. . .	8	. . . .	5 56 40 —	. . .	. . .
812	7 b	5.6	11 49,7	4 46 13 —	— 19,98	— 1,0
813	8 π	5	11 50,6	7 43 49 —	— 19,99	+ 3,2
817	9 o	4.5	11 55,0	9 50 47 —	— 20,00	— 2,6
822	10 r	6	11 59,4	3 1 20 —	— 20,01	+ 4,0
823	11 s	7	11 59,9	6 55 13 —	— 20,01	+ 3,0
825	12 t	6	12 3,2	11 22 35 —	— 20,01	+ 5,6
830	13 n	6	12 8,4	0 19 33 —	— 19,99	+ 8,0
832	14	6.7	12 9,1	7 48 0 A.	+ 19,99	+ 2,2
835	15 η	3.4	12 9,7	0 26 48 B.	— 19,99	+ 2,9
836	16 c	5.6	12 10,2	4 25 45 —	— 19,99	+ 3,6
837	17	6	12 12,4	6 25 12 —	— 19,98	+ 6,3
841	. . .	8	12 15,7	5 18 38 —	— 19,96	. . .
843	. . .	8	12 18,1	5 30 24 —	— 19,95	— 1,0
. .	18	6	12 18,7	14 49 36 —	— 19,95	. . .
o 6	19	6	12 20,4	10 49 37 —	— 19,93	. . .
849	20	6	12 22,9	11 23 57 —	— 19,91	+ 13.7
851	21 q	5.6	12 23,5	8 20 48 A.	+ 19,90	— 5,3

V I R G O.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Aſcenſio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h ′ ″	° ′ ″	″	″
852	. . .	7.8	12 24,3	8 50 42B.	— 19,90	— 8,7
854	25 f	6.7	12 26,5	4 43 36A.	+ 19,87	+ 0,7
. .	. . .	8	12 26,6	9 17 18B.	— 19 87	. . .
855	. . .	8	12 26,7	9 3 58—	— 19,87	. . .
856	23	7	12 27,0	9 54 7—	— 19,86	— 4,5
. .	24	7	12 27,3	6 39 33—	— 19,86	. . .
. .	. . .	8	. . . .	8 33 17—	— 19,86	. . .
860	26 χ	5	12 28,9	6 53 29A.	+ 19,85	— 1,3
862	27	6	12 31,5	11 31 35B.	— 19,81	+ 5,9
863	29 γ	3	12 31,5	0 21 0A.	+ 19,81	— 4,2
864	28	7	12 31,6	6 25 48—	+ 19,81	—118,0
865	30 ε	5	12 31,8	11 20 31B.	— 19,81	+ 2,7
866	31 d^1	6	12 31,8	7 54 32—	— 19,81	— 1,6
868	32 d^2	7	12 35,5	8 46 15—	— 19,77	+ 0,2
869	33	6	12 36,2	10 40 21—	— 19,76	+ 32,1
873	. . .	8	12 37,0	10 38 58—	— 19,75	. . .
874	34	6	12 37,2	13 3 12—	— 19,75	+ 10,5
876	35	6	12 37,7	4 40 10—	— 19,74	— 1,9
877	36	6	12 38,9	15 13 10—	— 19,72	0,0
880	37	6	12 41,4	4 8 55—	— 19,69	— 0,1
881	38	6	12 43,0	2 27 47A.	+ 19,67	+ 5,5
882	. . .	8	12 43,2	8 26 56—	+ 19,66	. . .
883	39	7.8	12 43,2	7 58 20—	+ 19,66	— 5,8
884	41	6	12 43,8	13 30 38B.	— 19,65	+ 0,5
885	40 ψ	5.6	12 44,0	8 27 16A.	+ 19,64	— 25,3
. .	. . .	8	. . .	13 33 29B.	— 19,63	. . .
886	42	7	12 45,1	8 54 23—	— 19,62	. . .
887	. . .	7	12 45,1	3 26 21A.	+ 19,62	— 72,0
888	43 δ	3.4	12 45,5	4 29 21B.	— 19,62	— 0,1
889	44 k^2	6	12 49,4	2 43 50A.	+ 19,55	— 10,7
891	46	6	12 50,3	2 17 22—	+ 19,54	— 7,4
892	47 ε	3.4	12 52,2	12 2 22B.	— 19,50	— 1,3
893	48	6	12 53,6	2 34 59A.	+ 19,47	— 4,9
894	49 g	5.6	12 57,4	9 40 2—	+ 19,39	— 5,3
895	50	6	12 59,3	9 15 32—	+ 19,36	+ 1,2
896	51 9	4.5	12 59,7	4 27 58—	+ 19,34	— 0,4
899	53	5	13 1,4	15 6 54—	+ 19,30	— 5,7
901	54	6	13 2,8	17 45 35—	+ 19,27	— 6,4
902	55	6	13 3,5	18 52 25—	+ 19,25	+ 5,0
904	56	7.8	13 4,3	9 18 9—	+ 19,23	+ 6,2

VIRGO.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h ′ ″	° ′ ″	″	″
905	57	6	13 5,2	18 52 21A.	+ 19,20	+ 1,0
907	59 e	6	13 6,9	10 28 29B.	— 19,15	— 3,7
908	58	7	13 7,0	9 29 9A.	+ 19,15	+ 1,3
. .	. . .	8	. . .	9 16 59—	. . .	. . .
910	60 σ	6	13 7,5	6 32 34B.	— 19,14	— 50,5
. .	61	4.5	13 7,6	17 11 24A.	+ 19,14	+ 6,8
912	62	7	13 9,8	10 14 48—	+ 19,08	+ 5,3
914	64	6	13 12,1	6 12 33B.	— 19,03	+ 3,3
915	63	6	13 12,3	16 40 56A.	+ 19,03	— 5,9
916	65	6	13 13,0	3 52 18—	+ 19,00	+ 4,0
917	66	6	13 14,2	4 6 43—	+ 18,97	+ 0,6
918	67 α	1	13 14,7	10 6 38—	+ 18,95	+ 5,2
920	68 i	5	13 16,2	11 39 43—	+ 18,92	— 6,6
. .	. . .	8	. . .	12 16 5—	. . .	. . .
922	69	6	13 16,8	14 55 45—	+ 18,90	+ 2,5
923	70	5.6	13 18,6	14 51 17B.	— 18,84	— 1,5
926	71	6	13 19,3	11 51 45—	— 18,82	— 2,8
927	72 l^x	7	13 20,0	5 26 9A.	+ 18,80	— 17,9
929	73	6	13 21,3	17 41 25—	+ 18,78	+ 1,3
930	74 l^2	6	13 21,6	5 12 59—	+ 18,76	+ 0,2
931	75	6	13 22,2	14 19 38—	+ 18,74	— 1,4
932	76 h	5.6	13 22,4	9 7 39—	+ 18,73	— 0,6
933	77	7	13 23,0	6 55 12—	+ 18,71	+ 3,9
935	78	6	13 24,0	4 41 8B.	— 18,68	+ 27,5
937	79 ζ	4	13 24,5	0 26 1—	— 18,67	— 2,7
938	. . .	8	13 24.7	5 41 39—	— 18,66	. . .
939	80 l^3	6	13 25,1	4 21 57A.	+ 18,65	+ 17,1
941	81	6	13 27,1	6 50 39—	+ 18,59	0,0
944	82 m	5.6	13 31,1	7 41 11—	+ 18,46	+ 1,3
945	84 o	6	13 33,0	4 33 27B.	— 18,40	+ 0,7
947	83	6	13 33,7	15 9 56A.	+ 18,38	+ 1,4
949	85	6	13 34,8	14 45 24—	+ 18,34	— 8,4
950	86	6	13 35,3	11 24 59—	+ 18,32	+ 2,6
951	87	6	13 36,6	16 15 1—	+ 18,26	— 0,2
953	88	6.7	13 37,9	5 49 49—	+ 18,22	+ 9,7
955	89	5.6	13 39,0	17 7 42—	+ 18,17	+ 3,2
958	. . .	7.8	13 40,4	6 47 3—	+ 18,13	+ 3,9
961	90 p	6	13 44,4	0 50 41—	+ 17,97	— 0,8
. .	. . .	8	. . .	1 50 40B.	. . .	. . .
964	92	7.8	13 46,3	2 2 13—	— 17,91	— 1,6

V I R G O.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazz.
			h ′ ″	° ′ ″	″	″
967	93 τ	4-5	13 51,5	2 51 15 B.	— 17,69	+ 0,7
970	94	6	13 55,7	7 55 54 A.	+ 17,52	+ 7,6
971	95	6.	13 56,2	8 21 1 —	+ 17,49	+ 1,6
974	96	6	13 58,4	9 22 41 —	+ 17,40	+ 0,7
979	97	6	14 1,9	8 57 2 —	+ 17,24	— 1,1
980	98 κ	4	14 2,2	9 20 5 —	+ 17,22	— 0,8
983	99 ι	4	14 5,5	5 2 14 —	+ 17,08	— 1,6
984	101	8	14 7,9	17 13 55 B.	— 16,99	. . .
985	100 λ	4	14 8,3	12 26 30 A.	+ 16,96	— 8,6
986	102 ν^2	6	14 9,2	1 19 53 —	+ 16,92	+ 7,6
988	103 ν^3	6	14 11,7	1 3 51 —	+ 16,80	+ 3,1
991	104	6.7	14 16,9	5 12 32 —	+ 16,55	— 1,8
994	105 φ	4-5	14 17,9	1 19 20 —	+ 16,51	— 9,5
995	106	6	14 18,2	5 59 33 —	+ 16,50	— 9,4
1002	107 μ	4-5	14 32,5	4 46 32 —	+ 15,74	+ 10,2
1003	108	6.7	14 35,3	1 54 17 B.	— 15,59	— 3,0
1004	109	4	14 36,1	2 44 47 —	— 15,54	— 5,9
. .	. . .	8	. . .	2 51 4 —	. . .	. . .

L I B R A.

			h ′ ″	° ′ ″	″	″
. .	. . .	6	14 4,4	17 15 38 A.	+ 17,14	— 2,1
. .	1	6	14 5,3	26 18 24 —	+ 17,09	. . .
. .	. . .	8	. . .	12 26 36 —	. .	. . .
1007	2	7	14 12,7	10 47 34 —	+ 16,76	— 8,5
. .	. . .	8	. . .	5 59 47 —	. . .	. . .
1011	3	6.7	14 27,8	24 9 14 —	+ 16,00	— 4,1
1014	4	7	14 31,7	24 8 10 —	+ 15,79	— 3,0
1016	5	6	14 35,0	14 35 5 —	+ 15,62	+ 78,1
1018	7 μ	5.6	14 38,4	13 18 21 —	+ 15,43	+ 8,5
1019	6	5	14 38,6	27 7 6 —	+ 15,44	— 7,7
1020	8 α^1	6	14 39,6	15 9 23 —	+ 15,36	— 5,5
1021	9 α^2	2	14 39,8	15 12 4 —	+ 15,35	— 0,6
1023	10	7	14 40,7	17 31 13 —	+ 15,30	+ 0,5
1024	11	6	14 40,7	1 27 25 —	+ 15,30	— 8,5
1025	12	6	14 42,7	23 48 51 —	+ 15,18	— 0,5

LIBRA.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.		Declinatio media ad initium anni 1800.			Variatio annua.	Differ. cum Piazzi.
			h	′	°	′	″	″	″
1026	15 ξ²	5.6	14	43,5	11	4	20 A.	+ 15,14	— 2,7
1028	14	7	14	45,9	24	37	29—	+ 15,00	— 0,4
1029	15 ξ¹	5	14	45,9	10	35	32—	+ 15,00	— 1,8
1030	16	5.6	14	46,8	3	31	18—	+ 14,95	— 1,3
1031	17	6	14	47,4	10	20	29—	+ 14,92	— 2,7
1032	18	7	14	48,1	10	19	49—	+ 14,88	— 3,5
1033	19 δ	4.5	14	50,3	7	42	54—	+ 14,75	— 3,0
1037	20 γ m	3.4	14	52,4	24	29	3—	+ 14,62	0,0
1039	21, ²	6	14	55,5	15	28	14—	+ 14,44	— 4,7
1040	22, ²	6.7	14	55,7	15	41	54—	+ 14,42	+ 2,1
. .	. . .	8	.	. .	14	37	57—	. . .	. . .
1041	23	8	14	56,2	24	33	22—	+ 14,38	. . .
1042	. . .	6	14	58,2	23	12	31—	+ 14,27	+ 2,7
1046	24 ι²	5	15	0,8	19	1	26—	+ 14,11	— 1,0
1047	25 ι²	6	15	2,0	18	52	59—	+ 14,04	— 0,9
1049	26	6	15	3,3	17	0	38—	+ 13,95	— 2,4
1050	27 β	2.3	15	6,3	8	38	1—	+ 13,77	+ 1,4
1052	28	6	15	9,6	17	25	17—	+ 13,56	— 2,1
1053	29 o²	6.7	15	9,9	14	48	57—	+ 13,54	— 2,7
1054	30 o²	6	15	11,9	14	24	32—	+ 13,41	— 3,7
1056	31 ε	4.5	15	13,4	9	35	35—	+ 13,31	— 4,3
1058	32 ζ²	6	15	17,0	16	0	18—	+ 13,08	+ 5,8
1059	. . .	7.8	15	18,3	16	44	19—	+ 12,99	+ 1,0
1060	33 ζ²	7	15	18,9	16	34	27—	+ 12,95	. . .
1061	34 ζ³	6	15	19,4	15	55	17—	+ 12,91	— 37,9
1063	. . .	6.7	15	21,1	18	58	34—	+ 12,81	+ 5,1
1064	35 ζ⁴	6	15	21,6	16	9	50—	+ 12,78	— 7,8
1065	36	5	15	22,5	27	21	22—	+ 12,71	+ 14,0
1066	37	4	15	23,3	9	22	1—	+ 12,65	+ 1,5
1067	38 γ	4	15	24,4	14	6	35—	+ 12,58	+ 1,0
1068	39	5.6	15	24,9	27	27	35—	+ 12,54	+ 0,9
1069	40	4.5	15	26,4	29	6	22—	+ 12,45	+ 1,4
1071	41	6	15	27,4	18	57	48—	+ 12,37	+ 3,2
1072	42	5.6	15	28,5	23	9	13—	+ 12,30	— 1,9
1073	43 x	5	15	30,4	19	1	0—	+ 12,17	+ 3,5
1075	44 η	4.5	15	32,8	15	1	20—	+ 12,00	+ 2,0
. .	. . .	8	.	. .	12	52	14—	. . .	. .
. .	. . .	8	.	. .	17	31	1—	. . .	. . .
1078	45 λ	5	15	41,7	19	33	20—	+ 11,36	+ 1,0
1079	46 9	5	15	42,5	16	7	45—	+ 11,31	+ 2,0

LIBRA.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h ′ ″	° ′ ″	″	″
1080	47	7	15 43,5	18 46 45 A.	+ 11,24	+ 0,7
1081	48 ψ	5	15 47,0	13 41 19 —	+ 10,98	+ 2,8
1082	49	5.6	15 49,1	15 55 46 —	+ 10,82	+ 4,5
1083	50	6	15 50,0	7 49 53 —	+ 10,75	+ 5,3
1084	51 ξ^3	4-5	15 53,4	10 48 24 —	+ 10,51	+ 6,1

SCORPIO.

			h ′ ″	° ′ ″	″	″
1086	1 b	5	15 25,5	25 7 50 A.	+ 11,56	— 1,6
1087	2 A^1	5	15 41,6	24 43 2 —	+ 11,37	— 2,7
1090	3 A^2	6	15 42,7	24 38 14 —	+ 11,29	+ 0,4
1091	4	6	15 43,4	25 39 45 —	+ 11,24	+ 0,4
1092	5 ε	4-5	15 44,6	28 36 56 —	+ 11,16	+ 2,3
1094	6 π	3-4	15 46,8	25 31 28 —	+ 10,99	+ 1,2
1095	7 δ	3	15 48,5	22 2 19 —	+ 10,87	— 0,1
1097	8 β	2	15 53,8	19 14 41 —	+ 10,47	— 1,3
1099	9 ω^1	4-5	15 55,1	20 6 52 —	+ 10,38	— 2,4
1100	10 ω^2	4-5	15 55,7	20 18 51 —	+ 10,34	— 1,0
1102	11	6	15 56,5	12 11 38 —	+ 10,27	+ 6,8
1103	12 c^1	6	15 59,9	27 52 26 —	+ 10,01	+ 30,4
1104	13 c^2	4-5	16 0,0	27 23 30 —	+ 10,01	+ 5,3
1106	14 ι	4	16 0,4	18 55 39 —	+ 9,98	+ 0,2
1107	15 χ	5	16 1,1	9 31 53 —	+ 9,93	+ 6,1
1108	16	6	16 1,3	7 56 8 —	+ 9,91	+295,0
1109	17	6	16 2,8	11 18 55 —	+ 9,80	— 2,4
1110	18	5	16 4,8	7 49 37 —	+ 9,65	— 2,0
1112	19 ο	5.6	16 8,6	23 40 23 —	+ 9,35	— 0,1
1113	20 σ	4	16 9,1	25 5 54 —	+ 9,32	— 0,1
. .	. . .	8	. . .	22 38 1 —	. . .	. . .
. .	. . .	8	. . .	20 33 17 —	. . .	. . .
1117	21 α	1	16 17,2	25 58 21 —	+ 8,69	+ 4,6
. .	. . .	8	. . .	27 27 38 —	. . .	. . .
1118	22 i	6	16 18,1	24 39 20 —	+ 8,62	+ 16,4
1120	23 τ	3-4	16 23,5	27 47 6 —	+ 8,18	+ 1,3
1121	. . .	7.8	16 26,9	17 48 16 —	+ 7,92	+ 0,5
1123	. . .	7.8	16 29,7	17 39 19 —	+ 7,69	— 0,8
1124	24 m	5	16 30,0	17 20 32 —	+ 7,65	— 4,6
1128	25	6	16 34,6	25 8 53 —	+ 7,29	+ 1,7

SCORPIO.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo magn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h ′ ″	° ′ ″	″	″
1130	26ε	3	16 37,2	33 54 44 A.	+ 7,08	+ 5,7
1132	μ^1	4	16 38,3	37 40 52—	+ 6,98	+ 21,2
1133	μ^2	3-4	16 38,8	37 39 21—	+ 6,95	+ 12,9
. . .	. . .	8	. . .	26 22 30—	. . .	. . .
1138	27	6	16 44,2	32 55 33—	+ 6,51	+ 0,6
. . .	. . .	8	. . .	21 8 27—	. . .	. . .
1142	k	5	16 51,0	35 49 29—	+ 5,87	+ 1,1
1144	28	6	16 54,3	21 16 13—	+ 5,67	+ 8,1
1140	. . .	8	17 0,2	26 46 27—	+ 5,17	. . .
1147	29	6	17 1,8	26 43 39—	+ 5,03	+ 3,6
1149	aOph.	4-5	17 3,1	26 17 37—	+ 4,93	— 1,6
1150	30	6	17 3,9	26 14 53—	+ 4,85	— 7,5
. . .	. . .	8	. . .	26 13 40—	. . .	. . .
1152	31	6.7	17 5,2	26 23 25—	+ 4,74	+ 5,0
. . .	. . .	8	. . .	26 33 49—	. . .	. . .
. . .	. . .	8	. . .	24 51 13—	. . .	. . .
1154	9Oph.	5	17 9,7	24 46 58—	+ 4,36	+ 3,7
. . .	. . .	8	. . .	24 44 43—	. . .	. . .
1158	33	6	17 12,9	24 2 34—	+ 4,09	+ 8,7
. . .	. . .	8	. . .	25 45 9—	. . .	. . .
1161	34ν	3-4	17 17,2	37 6 50—	+ 3,72	+ 9,4
1162	35λ	5	17 20,0	36 56 15—	+ 3,47	+ 9,5

SAGITTARIUS.

			h ′	° ′ ″	″	″
1165	1	6.7	17 19,3	26 6 11 A.	+ 5,57	— 10,5
1166	52Oph.	6.7	17 23,3	21 53 45—	+ 5,18	— 11,2
. .	Oph.	8	17 25,8	27 54 36—	+ 2,98	. . .
1168	2	6	17 26,7	21 46 54—	+ 2,90	— 14,1
. .	. . .	8	. . .	27 47 20—	. . .	. . .
1171	58Oph.	5	17 31,5	21 34 17—	+ 2,49	— 4,7
1173	3p	4-5	17 35,0	27 44 19—	+ 2,20	— 2,8
1174	. . .	7	17 36,0	26 53 14—	+ 2,10	— 0,7
. .	. .	8	. . .	22 13 51—	. . .	. . .
1181	63Oph.	6.7	17 42,6	24 49 56—	+ 1,53	— 4,5
. .	. . .	8	. . .	28 0 58—	. . .	. . .
1186	. . .	5	17 46,3	30 12 35—	+ 1,21	+ 21,3
. .	. . .	8	. . .	28 43 16—	. . .	. . .
1187	$4b^2$	5	17 47,6	23 46 56—	+ 1,09	— 3,8
1188	5i	7	17 47,9	24 15 9—	+ 1,05	— 0,8

SAGITTARIVS.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Aſcenſio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h ′	° ′ ″	″	″
1190	6	8	17 49,8	17 8 5 A.	+ 0,90	— 2,0
1193	7 a	5	17 50,6	24 15 54 —	+ 0,82	+ 0,7
. .	8	7	17 51,4	19 19 27 —	+ 0,75	. . .
1196	9	7	17 51,6	24 20 36 —	+ 0,74	+ 18,3
1199	. . .	5	17 52,2	29 34 18 —	+ 0,67	+ 2,8
1200	. . .	6.7	17 52,9	24 23 24 —	+ 9,63	+ 8,5
1201	10 γ	4	17 53,0	30 24 33 —	+ 0,62	— 0,7
. .	11	7	17 53,0	23 9 49 —	+ 0,62	—139,9
1202	. . .	5	17 55,4	28 27 46 —	+ 0,40	+ 0,2
1204	. . .	6	17 57,2	30 44 20 —	+ 0,25	— 3,5
1205	. . .	5.6	17 59,5	23 43 35 —	+ 0,04	— 1,0
. .	12	8	18 1,1	24 0 33 —	— 0,09	— 22,5
1206	13 μ^1	3.4	18 1,8	21 5 58 —	— 0,15	— 14,5
1207	14	6	18 2,3	21 45 4 —	— 0,22	— 0,8
1209	15 μ^2	6	18 3,3	20 46 20 —	— 0,29	— 1,7
1210	16	6	18 3,3	20 25 55 —	— 0,29	— 0,5
1211	17	7	18 4,7	20 35 48 —	— 0,41	— 6,4
1212	. . .	6	18 5,5	27 5 37 —	— 0,48	+ 16,5
. .	18	8	18 8,1	30 52 57 —	— 0,71	. . .
1213	19 δ	3.4	18 8,2	29 53 49 —	— 0,71	— 1,7
1214	. . .	7.8	18 8,4	31 0 42 —	— 0,73	— 0,2
1216	20 ε	3	18 10,9	34 27 50 —	— 0,95	— 9,0
1218	21	5.6	18 13,4	20 38 0 —	— 1,17	+ 0,5
1219	22 λ	3.4	18 15,6	25 30 56 —	— 1,36	+ 1,8
1220	. . .	6	18 16,3	17 54 24 —	— 1,42	. . .
. .	23	7	18 18,4	24 1 34 —	— 1,60	. . .
1231	. . .	6.7	18 21,7	24 9 58 —	— 1,89	— 2,8
1232	25	7	18 22,3	24 21 35 —	— 1,94	— 2,3
. .	. . .	8	18 22,9	30 4 29 —	— 2,00	. . .
. .	. . .	6	18 26,3	23 39 23 —	— 2,35	+ 11,0
. .	. . .	8	. . .	25 19 45 —	. . .	. . .
1240	26	6	18 29,7	24 0 14 —	— 2,58	— 0,2
1243	. . .	6	18 32,5	25 11 26 —	— 2,83	+ 18,9
1244	27 φ	4	18 33,2	27 10 59 —	— 2,88	— 10,9
1246	28	6	18 34,3	22 35 9 —	— 2,97	+ 0,1
1247	. . .	7.8	18 36,0	20 28 35 —	— 3,11	— 1,3
1248	29	6	18 37,8	20 32 3 —	— 3,29	+ 9,1
1249	30	6	18 38,8	22 22 33 —	— 3,37	— 2,7
1250	31	6	18 40,1	22 8 27 —	— 3,49	— 2,3
1251	33	6	18 42,0	21 35 15 —	— 3,65	+ 7,0

SAGITTARIVS.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.		Declinatio media ad initium anni 1800.		Variatio annua.	Differ. cum Piazzi.
			h	′	°	′ ″	″	″
1252	32, ^{1}	5	18	42,1	22	58 35 A.	— 3,65	— 3,4
1253	34 σ	3	18	42,9	26	31 50 —	— 3,72	— 7,5
1254	35, ^{2}	5	18	43,0	22	54 46 —	— 3,73	— 27,1
1257	36 ξ^1	6	18	45,4	20	54 13 —	— 3,95	— 4,8
1258	37 ξ^2	5	18	45,8	21	20 37 —	— 3,97	+ 37,0
1262	38 ζ	4	18	49,9	30	9 2 —	— 4,32	— 2,3
1263	. . .	6.7	18	50,2	25	6 11 —	— 4,35	+ 15,9
1265	39 o	4.5	18	52,7	22	1 22 —	— 4,56	— 14,7
1266	40 τ	4.5	18	54,4	27	56 47 —	— 4,71	— 0,2
1270	41 π	4	18	57,9	21	19 39 —	— 5,00	— 3,6
1276	42 ψ	6	19	3,5	25	35 13 —	— 5,46	— 3,2
1277	. . .	6	19	3,4	24	30 6 —	— 5,47	+ 9,2
1278	43 d	4	19	5,9	19	17 42 —	— 5,68	— 1,6
1281	. . .	6	19	8,0	22	45 35 —	— 5,90	+ 0,3
1283	44 ϵ^1	5	19	10,1	18	12 34 —	— 6,02	+ 0,3
1284	45 ϵ^2	6	19	10,2	18	39 55 —	— 6,04	— 4,5
1285	46 ν	5.6	19	10,3	16	19 3 —	— 6,04	— 7,0
1287	47 χ^1	5	19	13,1	24	52 52 —	— 6,28	+ 1,2
1288	48 χ^2	6	19	13,2	24	47 17 —	— 6,29	+ 1,2
1289	49 χ^3	6	19	13,4	24	20 21 —	— 6,30	+ 1,7
1291	50	6	19	14,4	22	9 17 —	— 6,38	+ 11,1
1294	. . .	6	19	16,4	18	45 0 —	— 6,55	. . .
1296	. . .	6	19	17,5	27	22 33 —	— 6,63	+ 13,8
1298	. . .	6	19	19,0	21	42 46 —	— 6,75	+ 3,7
1299	. . .	7	19	20,2	28	23 2 —	— 6,86	. . .
1302	51 h^1	6	19	23,9	25	8 34 —	— 7,16	— 1,1
1303	52 h^2	4.5	19	24,5	25	18 59 —	— 7,22	— 2,4
1306	53	6.7	19	27,8	23	52 3 —	— 7,48	+ 2,0
1307	. . .	6	19	28,1	23	52 28 —	— 7,50	— 9,8
1308	54 e^1	5.6	19	29,3	16	44 14 —	— 7,59	+ 1,2
1309	55 e^2	5	19	31,1	16	34 43 —	— 7,75	— 1,8
1310	. . .	6	19	32,1	15	55 11 —	— 7,82	+ 0,4
1311	n	6	19	33,2	32	22 19 —	— 7,93	+ 12,1
1312	56 f	6	19	34,7	20	13 40 —	— 8,04	— 31,0
. .	. . .	8	.	. .	17	32 39 —	. . .	. . .
. .	. . .	8	.	. .	17	33 10 —	. . .	. . .
1319	57	5.6	19	40,6	19	31 22 —	— 8,51	+ 57,1
1320	58 ω	5.6	19	43,6	26	48 55 —	— 8,73	+ 0,9
1321	59 b^2	5	19	44,6	27	41 9 —	— 8,84	— 3,2
1322	61 g	6	19	46,6	16	0 33 —	— 8,98	— 6,6

SAGITTARIVS.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h m s	° ′ ″	″	″
1323	60 A	5.6	19 46,7	26 43 19 A.	— 9,00	+ 2,5
1324	. . .	7	19 47,7	22 44 25 —	— 9,06	. . .
1325	. . .	6	19 49,5	23 16 23 —	— 9,20	— 0,4
. .	h	6	19 50,2	38 28 35 —	— 9,25	+ 5,0
1326	62 c	5	19 50,3	28 15 3 —	— 9,27	+ 2,0
1327	63	6	19 50,8	17 10 40 —	— 9,30	+ 1,5
1330	64	6	19 54,0	12 9 1 —	— 9,57	— 4,8
1331	65	6	19 54,3	13 13 1 —	— 9,59	— 0,4
1333	r	6	20 2,8	27 36 35 —	— 10.22	+ 16,6

CAPRICORNVS.

			h m s	° ′ ″	″	″
1339	1	6.7	20 0,9	12 58 32 A.	— 10,08	— 4,3
1340	2 ξ	6	20 1,3	13 11 30 —	— 10,11	— 3,9
1341	3	6.7	20 5,3	12 56 18 —	— 10,41	— 5,7
1342	4	6	20 6,3	22 24 59 —	— 10,48	— 9,6
1343	5 α^1	3	20 6,6	13 6 58 —	— 10,50	— 6,5
1344	6 α^2	3	20 6,9	13 9 16 —	— 10,53	— 7,1
1345	7 σ	5.6	20 7,8	19 43 52 —	— 10,60	— 3,3
1347	8 ι	5	20 9,6	13 22 39 —	— 10,73	— 3,4
1348	9 β	3.4	20 9,8	15 24 6 —	— 10,74	— 4,0
1351	. . .	7	20 13,5	20 4 17 —	— 10,73	— 7,4
1353	10 π	5	20 15,9	18 51 20 —	— 11,17	— 2,0
1354	11 ζ	5	20 17,4	18 27 52 —	— 11,36	— 5,8
1356	. .	7	20 18,4	19 14 12 —	— 11,37	— 2,0
1357	12 ρ	6	20 18,4	19 14 0 —	— 11,37	— 2,6
. .	. . .	8	. . . .	16 25 54 —	. . .	. . .
. .	. . .	8	. . . .	15 42 54 —	. . .	. . .
1361	. . .	7.8	20 21,2	17 16 33 —	— 11,58	— 6,1
1363	. . .	7	20 24,2	17 12 8 —	— 11,78	— 5,3
1365	13	6	20 26,1	15 49 43 —	— 11,92	— 1,3
1367	14 τ	6	20 28,1	15 38 44 —	— 12,05	— 7,3
1368	15 υ	8	20 28,6	18 49 54 —	— 12,09	— 2,6
1370	. . .	7	20 31,3	18 48 51 —	— 12,26	. . .
1371	16 ψ	4.5	20 34,2	25 58 45 —	— 12,48	— 11,7
1372	17	6	20 54,5	22 13 50 —	— 12,50	— 4,7
. .	. . .	8	. . . .	19 59 2 —	. . .	. . .

CAPRICORNVS.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h ′	° ′ ″	″	″
1375	. . .	8	20 37,4	26 30 10 A.	— 12,63	+ 15,4
1377	18 ω	5.6	20 39,9	27 39 18 —	— 12,85	— 0,3
1379	19	6	20 43,5	18 40 25 —	— 13,10	— 12.7
. . .	. . .	8	20 44,5	17 51 50 —	— 13,16	. . .
1383	20	6	20 48,2	19 48 3 —	— 13,41	— 5,8
1384	21	6	20 49,6	18 18 3 —	— 13,50	— 2,4
1386	22 η	5	20 53,0	20 38 11 —	— 13,72	— 7,3
1387	23 θ	5	20 54,7	18 0 58 —	— 13,82	+ 5,1
1388	24 A	5.6	20 55,4	25 47 42 —	— 13,86	— 6,8
1389	25 χ^1	5.6	20 57,1	21 59 12 —	— 13,98	— 2,8
1390	26 χ^2	7	20 57,8	20 59 30 —	— 14,01	+ 0,9
1391	27 χ^3	6	20 58,1	21 20 58 —	— 14,03	— 8,3
1393	28 φ	6	21 4,2	21 28 21 —	— 14,42	— 3,9
1394	29	5	21 4,7	15 59 36 —	— 14,44	— 4,8
1395	30	6	21 6,7	18 48 46 —	— 14,55	— 1,5
1396	31	6.7	21 7,1	18 17 31 —	— 14,57	— 4,2
1399	32 ι	5	21 11,1	17 40 36 —	— 14,82	— 0,9
1400	. . .	6	21 11,5	23 30 30 —	— 14,85	+ 15,4
1402	33	5.6	21 12,8	21 41 33 —	— 14,93	— 2,8
1403	34 ζ	4	21 15,2	23 16 7 —	— 15,06	— 5,0
1404	35	6	21 15,9	22 3 10 —	— 15,09	— 6,3
1405	36 b	5.6	21 17,3	22 40 9 —	— 15,18	— 5,0
1406	. . .	7	21 18,7	20 0 41 —	— 15,26	+ 0,6
1408	. . .	6	21 21,0	25 27 50 —	— 15,39	— 2,3
1410	37	7	21 23,6	20 57 59 —	— 15,53	— 1,3
1411	38	7	21 23,6	21 7 49 —	— 15,54	— 4,7
1412	39 ε	5	21 25,9	20 21 15 —	— 15,66	— 5,6
1413	40 γ	4	21 29,0	17 33 26 —	— 15,83	— 2,6
1414	41	5	21 30,6	24 9 34 —	— 15,91	— 4,8
1415	42 d^1	6	21 30,7	14 55 50 —	— 15,92	— 1,7
1416	43 ϰ	5	21 31,5	19 46 12 —	— 15,96	— 5,4
1418	44 d^2	6	21 32,1	15 18 21 —	— 15,99	— 2,4
1419	45	6	21 33,1	15 39 28 —	— 16,04	— 5,2
1420	46 c^1	6	21 34,3	9 59 38 —	— 16,12	— 34,8
1421	47 c^2	6.7	21 35,6	10 11 28 —	— 16,17	— 2,1
1422	48 λ	5	21 35,8	12 16 49 —	— 16,18	— 3,2
1423	50	6	21 35,9	12 36 22 —	— 16,19	— 4,9
1424	49 δ	3	21 36,0	17 1 37 —	— 16,19	— 5,7
. .	. . .	8	. . .	9 54 25 —	. . . .	. . .
1428	51 μ	5	21 42,4	14 29 8 —	— 16,51	— 3,8

AQVARIVS.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Afcenfio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h ′ ″	° ′ ″	″	″
1433	1	5.6	20 29,2	0 12 29 A.	— 12,12	— 7,4
. .	. . .	8	. . . .	3 20 26 —	. . .	. . .
. .	. . .	8	. . . .	4 40 45 B.	. . .	. . .
. .	. . .	8	. . . .	1 3 36 A	. . .	. . .
1437	2ε	4.5	20 36,8	10 13 6 —	— 12,65	— 8,3
1438	3	4	20 37,2	5 45 2 —	— 12,68	— 6,7
. .	. . .	8	. . . .	0 47 35 —	. . .	. . .
1440	4	6	20 40,8	6 21 55 —	— 12,91	— 9,7
1442	5	6	20 41,6	6 14 52 —	— 12,96	— 8,2
1443	6μ	5	20 41,9	9 43 26 —	— 12,98	— 6,9
. .	. . .	8	. . . .	9 37 49 —	. . .	. . .
1447	7	6	20 46,1	10 27 17 —	— 13,27	— 6,1
1448	8	6	20 48,9	13 49 13 —	— 13,44	— 7,1
1449	10	6.7	20 50,0	6 14 53 —	— 13,52	— 4,5
14	11	6	20 50,0	5 29 40 —	— 13,53	— 9,2
1451	9	6	20 50,1	14 18 9 —	— 13,53	— 5,2
1453	12	5.6	20 53,5	6 36 22 —	— 13,74	— 5,2
1454	. . .	8	20 55,0	5 9 0 —	— 13,84	. . .
1455	13	5	20 58,7	12 10 23 —	— 14,07	— 6,2
. .	. . .	8	. . . .	10 9 22 —	. . .	. . .
. .	. . .	8	. . . .	11 25 20 —	. . .	. . .
1461	14	6	21 5,5	10 2 18 —	— 14,48	— 2,3
1463	15	6.7	21 7,7	5 21 0 —	— 14,62	— 3,0
146	16	6	21 10,6	5 24 3 —	— 14,79	— 6,2
. .	. . .	8	. . . .	10 10 1 —	. . .	. .
1468	17	6	21 12,2	10 9 46 —	— 14,89	— 3,2
46	18	6	21 13,2	13 43 45 —	— 14,95	— 11,3
1470	20	6	21 14,4	4 14 55 —	— 15,01	— 7,1
1471	19	6	21 14,5	10 55 27 —	— 15,01	— 2,3
147 2	21	5	21 14,8	4 24 20 —	— 15,03	— 4,6
. .	. . .	8	. . . .	7 52 11 —	. . .	. . .
1477	22β	3.4	21 21,0	6 26 22 —	— 15,39	— 8,0
. .	. . .	8	. . . .	6 17 9 —	. . .	. . .
1480	23ξ	5	21 27,1	8 44 36 —	— 15,72	— 4,9
. .	. . .	8	. . . .	1 16 46 —	. . .	. . .
1482	24	7	21 29,2	0 56 52 —	— 15,83	— 1,9
1483	25d	5.6	21 29,4	1 21 6 B.	+ 15,85	+ 3,0
1485	26	6	21 32,0	0 22 56 —	+ 15,98	+ 3,3
. .	. . .	8	. . . .	0 22 19 A.	. . .	. . .
1487	. . .	8	21 33,9	5 38 22 —	— 16,08	. . .

AQVARIVS.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h ′	° ′ ″	″	″
. .	. . .	8	. . . .	9 59 35A.	. . .	. . .
. .	. . .	8	. . . .	10 11 26—	. . .	. . .
. .	27	5.6	21 37,1	1 46 7B.	+ 16,25	+ 4,6
. .	. . .	8	. . . .	0 10 32A.	. . .	. . .
. .	. . .	8	. . . .	0 9 36—	. . .	. . .
1491	. . .	7	21 38,9	13 38 52—	— 16,53	— 3,3
. .	. . .	7	21 42,3	4 55 35—	— 16,50	+ 8,0
. .	. . .	8	. . . .	0 58 29—	. . .	. . .
. .	. . .	8	. . . .	3 12 46B.	. . .	. . .
. .	. . .	8	. . . .	0 10 0A.	. . .	. . .
1502	28	6	21 50,5	0 20 2—	— 16,92	+ 50,0
1504	29	6	21 51,5	17 55 22—	— 16,95	— 13,7
1505	30	5.6	21 52,7	7 29 1—	— 17,00	— 8,3
1506	31 o	5	21 53,0	3 6 59—	— 17,01	— 11,2
1508	32	5.6	21 54,5	1 52 7—	— 17,09	— 10,1
1509	34 a	3	21 55,5	1 17 14—	— 17,12	— 9,5
1510	33 i	4.5	21 55,6	14 50 3—	— 17,13	— 8,5
1511	35	5.6	21 58,0	19 29 34—	— 17,24	— 9,0
1512	36	7	21 58,9	9 9 49—	— 17,29	— 7,7
1513	37	6	21 59,8	11 47 58—	— 17,32	— 5,8
1514	38 e	5.6	21 59,9	12 32 36—	— 17,32	— 10,4
1517	39	6	22 1,6	15 9 55—	— 17,40	+ 20,1
1520	40	6.7	22 2,7	12 54 29—	— 17,45	— 4,3
1521	41	5.6	22 3,2	22 3 49—	— 17,47	— 6,2
1522	42	6	22 6,1	13 49 25—	— 17,58	— 6,6
1523	43 ϑ	4.5	22 6,3	8 46 28—	— 17,59	— 9,0
1525	44	6	22 6,7	6 22 44—	— 17,61	— 0,2
1526	45	6	22 8,3	14 18 2—	— 17,67	— 5,1
1527	46 ζ	6	22 9,7	8 49 12—	— 17,74	— 8,3
1528	47	5	22 10,6	22 35 47—	— 17,78	— 12,1
1529	48 γ	3.4	22 11,3	2 23 26—	— 17,80	— 8,3
1530	49	6	22 12,3	25 46 3—	— 17,84	— 5,9
1531	51	6	22 13,7	5 50 41—	— 17,90	— 8,9
1532	50	6	22 13,7	14 31 15—	— 17,90	— 1,9
1534	52 π	5	22 15,1	0 22 3B.	+ 17,95	+ 5,0
1535	. . .	6	22 15,1	24 41 24A.	— 17,96	+ 5,8
1537	53]d	6	22 15,7	17 45 12—	— 17,98	— 1,3
1538	54	6	22 16,1	12 14 27—	— 17,99	— 5,4
1539	55 ζ	4	22 18,5	1 2 20—	— 18,08	— 4,2
1540	56	6	22 19,6	15 36 10—	— 18,12	— 5,3

AQVARIVS.

Num. Catal. ZACH.	Num. Catalog. FLAMST.	Ordo mgn.	Aſcenſio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum PIAZZI.
			H ′ ″	° ′ ″	″	″
1541	57 σ	5	22 20,1	11 41 48 A.	— 18,14	— 4,5
1542	58	6	22 21,1	11 55 31 —	— 18,18	— 5,8
1543	59 υ	5	22 23,7	22 43 52 —	— 18,27	— 19,2
1544	60	6	22 23,7	2 55 59 —	— 18,27	— 6,1
1545	61	6	22 25,0	18 29 16 —	— 18,33	— 6,0
1546	62 η	4	22 25,1	1 8 30 —	— 18,33	+ 2,7
1547	63 x	5	22 27,4	5 15 19 —	— 18,40	— 5,8
1550	64	6.7	22 28,7	11 3 47 —	— 18,44	— 4,6
. .	. . .	8	. . . .	9 23 57 —	. . .	. . .
1553	65	6	22 32,5	11 8 46 —	— 18,57	— 6,0
1556	67	6	22 32,8	8 0 14 —	— 18,58	— 7,2
1557	66 g^1	6	22 32,8	19 52 24 —	— 18,58	+ 0,9
1559	68 g^2	6	22 36,8	20 58 9 —	— 18,70	+ 54,4
1560	69 π^1	5.6	22 37,1	15 6 29 —	— 18,72	— 8,0
1561	70	6	22 38,0	11 36 29 —	— 18,74	— 5,8
1562	71 π^2	5.6	22 39,0	14 38 37 —	— 18,77	— 5,9
1563	72	7.8	22 40,3	8 21 58 —	— 18,81	— 0,3
1564	73 λ	4	22 42,2	8 58 21 —	— 18,87	— 1,3
1565	74	6	22 42,9	12 40 32 —	— 18,89	— 0,4
. .	. . .	8	. . . .	13 5 46 —	. . .	. . .
1566	75	6.7	22 43,6	13 14 53 —	— 18,91	— 2,0
1567	76 δ	5.4	22 44,0	16 52 50 —	— 18,92	— 5,5
1568	78	6	22 44,1	8 15 50 —	— 18,92	— 3,8
1569	77	6	22 44,2	17 19 43 —	— 18,92	— 5,3
1570	α P. auſtr.	1.2	22 46,6	30 40 39 —	— 18,99	— 0,5
1571	. . .	7.8	22 46,9	5 52 26 —	— 19,01	+ 0,6
. .	. . .	8	22 48,2	5 47 45 —	— 19,04	. . .
1574	. . .	8	22 49,5	3 30 33 —	— 19,08	— 6,2
1576	81	6	22 51,0	8 7 52 —	— 19,11	— 4,0
1579	82	6	22 52,1	7 38 35 —	— 19,14	— 0,9
1580	83 h^1	6	22 54,7	8 46 23 —	— 19,20	— 15,7
1581	84 h^2	6.7	22 54,9	8 49 47 —	— 19,20	— 1,4
1582	85 h^3	6	22 55,5	9 0 45 —	— 19,22	— 5,9
1583	86 c^1	6	22 55,9	24 49 15 —	— 19,23	— 5,4
1584	87 h^4	7.8	22 56,8	8 46 13 —	— 19,26	— 6,3
1586	88 c^2	4	22 58,8	22 15 18 —	— 19,30	— 6,0
1587	89 c^3	5	22 59,2	23 32 16 —	— 19,31	— 5,8
1588	. .	7.8	23 0,3	7 2 31 —	— 19,33	+ 1,5
1589	90 φ	5	23 4,0	7 7 27 —	— 19,42	— 4,9
1590	91 ψ^1	4.5	23 5,4	10 10 26 —	— 19,44	— 2,6

AQVARIVS.

Num. Catal. ZACH.	Num. Catalog. FLAMST.	Ordo mgn.	Aſcenſio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum PIAZZI.
			h m s	° ′ ″	″	″
1591	92 χ	5.6	23 6,5	8 48 52 A.	— 19,46	— 3,0
1592	93 ψ^2	5	23 7,5	10 16 18 —	— 19,49	— 4,9
1593	95 ψ^3	5	23 8,5	10 42 3 —	— 19,51	— 3,7
1594	94	6	23 8,6	14 32 37 —	— 19,51	— 2,4
1595	96	6	23 9,0	6 12 53 —	— 19,52	— 6,4
1596	. . .	7	23 10,4	6 59 47 —	— 19,54	. . .
. .	. . .	8	. . . .	7 16 56 —	. . .	. . .
1599	97	6	23 12,2	16 8 2 —	— 19,57	+ 1,0
1600	98 b^2	5	23 12,4	21 11 22 —	— 19,58	— 3,8
1602	99 b^3	5	23 15,5	21 44 8 —	— 19,64	0.0
. .	. . .	8	. . . .	16 20 40 —	. . .	. .
1604	. . .	7	23 17,7	12 32 37 —	— 19,67	+ 13,1
1605	100 b^3	6	23 21,2	22 28 15 —	— 19,72	— 0,8
1607	101 b^4	5	23 22,8	22 1 5 —	— 19,75	— 3,0
1608	Ceti	6	23 24,4	16 20 35 —	— 19,77	+ 6,2
1610	Ceti	8	23 25,9	16 23 59 —	— 19,78	+ 3,7
1611	. . .	7	23 27,6	16 11 40 —	— 19,81	. . .
1613	102 e^1	5	23 29,4	15 19 30 —	— 19,83	— 0,8
1614	103 A^1	5	23 31,2	19 7 48 —	— 19,85	+ 0,8
1615	104 A^2	5	23 31,4	18 55 25 —	— 19,85	+ 0,4
1616	105 e^2	6	23 32,3	15 36 58 —	— 19,85	— 0,9
1617	106 A^3	5	23 33,8	19 23 5 —	— 19,88	+ 2,1
1618	107 A^4	6	23 35,6	19 47 19 —	— 19,90	— 3,0
. .	. . .	8	. . . .	14 23 24 —	. . .	. . .
1623	Ceti	6.7	23 39.2	16 58 11 —	— 19,95	. . .
. .	. . .	8	. . . .	14 20 59 —	. . .	. . .
1625	108 A^5	6	23 41,0	20 1 9 —	— 19,94	+ 4,9

PISCES.

			h m s	° ′ ″	″	″
1626	1	6	22 44,8	0 0 8 B.	+ 18,94	+ 5,5
1627	. . .	8	22 47,4	2 44 30 —	+ 19,01	. . .
1628	2	6.7	22 49,2	0 6 10 A.	— 19,07	— 6,5
1629	3	6	22 50,4	0 53 8 —	— 19,10	— 7,8
1630	. . .	7	22 50,5	1 56 35 B.	+ 18,11	+ 15,0
1631	. . .	8	22 51,5	2 27 48 —	+ 19,15	. . .
1632	4	5	22 52,7	2 44 45 —	+ 19,18	+ 6,2
. .	. . .	8	. . . .	0 15 55 —	. . .	. . .
1634	5 A	6	22 58,5	1 2 51 —	+ 19,30	+ 2,8
1635	. . .	8	22 59,2	1 5 45 —	+ 19,31	+ 5,8

PISCES.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			h ′	° ′ ″	″	″
. .	. .	8	. . . .	1 55 17B.	. . .	. . .
1636	. .	8	23 1,1	3 54 41—	+ 19,35	. . .
1638	6 γ	4.5	23 6,8	2 11 31—	+ 19,46	+ 4,6
. .	. .	8	. . . .	2 14 53—	. . .	. . .
1640	7 b	6	23 10,2	4 17 53—	+ 19,53	— 0,5
. .	. .	8	. . . .	4 8 50—	. . .	. . .
. .	. .	8	. . . .	2 37 13—	. . .	. . .
1644	8 κ^1	5.6	23 16,7	0 9 46—	+ 19,65	+ 5,0
1645	9 κ^2	6	23 17,0	0 1 52—	+ 19,65	+ 5,6
1646	10 ϑ	5	23 17,8	5 17 1—	+ 19,67	+ 3,4
1647	11	6.7	23 19,2	2 53 26A.	— 19,68	— 5,0
1649	12	6	23 19,2	2 8 7—	— 19,69	— 8,6
1651	13	6	23 21,7	2 11 22—	— 19,73	— 8,2
1652	14	6	23 23,9	2 21 3—	— 19,76	— 6,5
1653	15	6	23 25,3	0 12 37B.	+ 19,78	+ 0,5
1655	16	6	23 26,2	0 59 37—	+ 19,79	+ 7,4
. .	. .	8	. . . .	5 45 20—	. . .	. . .
1656	17 ι	5	23 29,7	4 32 42—	+ 19,83	+ 3,4
1658	18 λ	5	23 31,8	0 40 54—	+ 19,86	+ 1,1
. .	. .	8	. . . .	1 46 13A.	. . .	. . .
1661	19	5	23 36,2	2 22 41B.	+ 19,90	+ 4,9
1662	20	5.6	23 37,7	3 52 22A.	— 19,91	— 7,5
1664	21	6	23 39,2	0 1 59—	— 19,93	— 3,0
1665	22	6	23 41,7	1 49 3B.	+ 19,94	+ 9,5
1666	23	6	23 42,3	20 33 39—	+ 19,95	— 2,0
1667	24	6	23 42,7	4 15 57A.	— 19,95	— 8,5
1668	25	6.7	23 42,8	0 58 47B.	+ 19,95	+ 1,5
1670	26	6	23 44,9	5 57 38—	+ 19,96	— 1,8
1671	. .	8	23 46,5	3 36 47—	+ 19,97	. . .
1672	27	5	23 48,4	4 39 56A.	— 19,98	— 7,5
1673	28 w	4	23 49,0	5 45 24B.	+ 19,98	+ 4,4
. .	. .	8	. . . .	4 8 24A.	. . .	. . .
. .	. .	8	. . . .	3 52 47—	. . .	. . .
1676	29	5	23 51,6	4 8 24—	— 20,00	— 3,1
1677	30	4.5	23 51,7	7 7 24—	— 20,00	+ 1,0
1679	31 c^1	6	23 52,2	7 50 38B.	+ 20,00	0,0
1680	32 c^2	6	23 52,3	7 22 30—	+ 20,00	— 1,2
1683	33	5	23 55,1	6 49 29A.	— 20,01	+ 1,4
. .	. .	8	. . . .	3 39 33—	. . .	. . .
1684	. .	7	23 58,0	3 33 36—	— 20,01	— 1,0

PISCES.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mgn.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazz.
			h m s	° ′ ″	″	″
. .	5 Ceti	6.7	23 58,5	3 20 4 A.	— 20,01	+ 1,4
1686	34	6	23 59,8	10 2 0 B.	+ 20,01	+ 0,8
. .	. . .	8	. . . .	4 25 59 A.	. . .	. . .
1688	. . .	8	0 3,6	0 16 24 B.	+ 20,01	. . .
1689	. . .	8	0 4,4	0 11 9 —	+ 20,01	. . .
1690	35	6	0 4,7	7 42 39 —	+ 20,01	— 0,2
1692	36	6.7	0 6,3	7 7 48 —	+ 20,00	— 1,4
1694	37	7	0 6,5	12 48 26 —	+ 20,00	— 6,6
1695	38	6	0 7,1	7 45 49 —	+ 20,00	— 7,4
1696	39	7	0 7,5	15 13 24 —	+ 20,00	— 5,6
1699	40	6	0 9,6	15 8 32 —	+ 19,99	— 5,9
1700	41 d	5.6	0 10,3	7 4 47 —	+ 19,99	— 1,5
1701	42	6	0 12,1	12 22 22 —	+ 19,98	— 4,6
1702	43	7	0 14,3	13 12 22 —	+ 19,97	+ 2,6
1703	44	6	0 15,2	0 50 0 —	+ 19,96	— 4,0
1704	45	6	0 15,4	6 35 13 —	+ 19,96	— 6,1
1707	46	7	0 17,6	18 24 29 —	+ 19,95	— 2,3
1708	47	6	0 17,6	16 47 5 —	+ 19,95	— 0,2
1709	48	6	0 17,8	15 20 22 —	+ 19,95	— 2,9
1710	49	7	0 20,4	14 55 57 —	+ 19,93	— 1,9
1711	. . .	7	0 21,2	14 55 5 —	+ 19,93	— 1,0
1712	51	6	0 22,1	5 51 3 —	+ 19,92	— 1,0
1713	52	6	0 22,1	19 11 39 —	+ 19,92	— 3,5
1719	. . .	8	0 25,6	12 6 52 —	+ 19,88	. . .
1720	53	6	0 26,4	14 7 53 —	+ 19,88	— 1,5
1722	54	6.7	0 29,0	20 10 23 —	+ 19,85	— 6,6
1725	55	6	0 29,4	20 20 27 —	+ 19,84	— 3,0
. .	. . .	8	. . . .	20 19 16 —	. . .	. . .
. .	. . .	8	. . . .	8 15 47 —	. . .	. . .
. .	. . .	8	. . . .	20 0 22 —	. . .	. . .
. .	. . .	8	. . . .	15 34 12 .	. . .	. . .
1728	57	6.7	0 36,1	14 23 4 —	+ 19,76	— 2,8
1729	58	6	0 36,6	10 52 56 —	+ 19,76	— 4,0
1730	59	6	0 36,7	18 28 57 —	+ 19,76	+ 6,3
1731	60	6	0 37,1	5 38 47 —	+ 19,75	— 25,7
1732	61	7.8	0 37,3	19 49 54 —	+ 19,74	— 2,5
1734	62	6	0 37,9	6 12 30 —	+ 19,73	— 3,8
1735	63 δ	5	0 38,3	6 29 45 —	+ 19,72	+ 1,0
1736	64	5.6	0 38,5	15 51 42 —	+ 19,72	— 8,1
1737	65 i	6	0 39,2	26 37 10 —	+ 19,71	— 2,1

PISCES.

Num. Catal. ZACH.	Num. Catalog. FLAMST.	Ordo mgn.	Ascenſio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum PIAZZI.
			h ′	° ′ ″ B.	″	″
. .	. . .	8	. . . .	11 41 59 B.	. . .	. . .
1740	66	6	0 44,0	18 6 10 —	+ 19,64	— 2,0
1742	67 k	6	0 45,2	26 7 31 —	+ 19,62	— 6,8
1746	68 h^2	6	0 47,0	27 54 33 —	+ 19,59	— 2,0
. .	. . .	8	. . . .	22 20 7 —	. . .	. . .
. .	. . .	8	. . . .	20 19 16 —	. . .	. . .
1751	. . .	8	0 49,8	20 10 9 —	+ 19,53	. . .
1753	70	8	0 51,7	6 48 43 —	+ 19,50	+172,8
1754	69 σ^1	5.6	0 51,9	30 43 40 —	+ 19,50	+ 0,2
1755	71 ε	4	0 52,6	6 48 41 —	+ 19,49	— 1,0
1757	73	6.7	0 54,5	4 34 54 —	+ 19,46	— 0,4
1758	72	6	0 54,5	13 52 13 —	+ 19,46	— 8,0
1759	74 ψ^1]d	5.6	0 55,0	20 23 57 —	+ 19,44	+ 2,0
. .	. . .	8	. . . .	20 24 21 —	. . .	. . .
1761	76 σ^2	6.7	0 55,2	31 6 35 —	+ 19,44	— 6,1
1763	77 seq.	8	0 55,5	3 50 55 —	+ 19,43	— 3,0
1764	75	6	0 56,1	11 52 57 —	+ 19,42	— 7,1
1765	78	6	0 57,0	30 56 40 —	+ 19,40	— 8,1
1766	79 ψ^2	6	0 57,2	19 40 32 —	+ 19,40	— 9,0
1768	80 e	5	0 58,1	4 35 22 —	+ 19,38	— 1,7
1770	81 ψ^3	6	0 59,1	18 35 24 —	+ 19,35	— 4,8
1773	82 g	5.6	1 0,1	30 21 29 —	+ 19,33	— 2,5
1775	83 τ	6	1 0,7	29 1 30 —	+ 19,31	— 1,1
1776	84 χ	5	1 0,7	19 58 3 —	+ 19,31	+ 0,3
1779	85 φ	6	1 2,9	23 31 22 —	+ 19,27	— 6,4
1780	86 ζ^1	6	1 3,3	6 30 56 —	+ 19,26	— 1,4
1782	87	6.7	1 3,5	15 4 24 —	+ 19,25	— 8,3
1783	88	6.7	1 4,3	5 56 8 —	+ 19,23	— 2,6
1784	89 f	6	1 7,5	2 33 30 —	+ 19,14	+ 3,8
1785	90 υ	5.6	1 8,5	26 12 36 —	+ 19,12	— 0,7
1787	91 l	6	1 10,1	27 41 25 —	+ 19,08	— 3,9
1790	92	7.8	1 13,1	16 46 24 —	+ 19,00	— 1,3
. .	. . .	8	. . . .	15 12 46 —	. . .	. . .
1792	93 ζ^2	5.6	1 15,5	18 7 41 —	+ 18,93	— 0,4
1794	94 ζ^3	5.6	1 15,9	18 12 5 —	+ 18,92	— 2,9
1796	95	7	1 17,3	4 19 11 —	+ 18,88	— 2,5
1798	96	6.7	1 18,6	6 15 23 —	+ 18,84	+ 6,3
1799	97	6.7	1 19,1	17 18 12 —	+ 18,83	+ 52,5
1800	98 μ	5	1 19,7	5 6 39 —	+ 18,81	— 6,5
1801	99 η	4	1 20,8	14 18 41 —	+ 18,78	— 2,4

PISCES.

Num. Catal. Zach.	Num. Catalog. Flamst.	Ordo mag.	Ascensio recta media in tempore 1800.	Declinatio media ad initium anni 1800.	Variatio annua.	Differ. cum Piazzi.
			♓ ° ′ ″	° ′ ″	″	″
. .	. . . .	8	. . . .	14 35 34 B.	. . .	. . .
. .	. . . .	8	. . . .	22 55 28—	. . .	. . .
1807	100] d	6.	1 24,2	11 31 53—	+ 18,67	— 2,6
1810	101	6	1 25,1	13 38 6—	+ 18,65	+ 0,4
. .	. . . .	8	. . . .	22 33 57—	. . .	. . .
1812	102 π	6	1 26,5	11 6 56—	+ 18,61	— 3,6
1814	. . . .	7.8	1 27,1	11 3 16—	+ 18,59	+ 0,7
1815	103	7.8	1 28,5	15 36 24—	+ 18,54	— 0,1
1816	104	6.7	1 28,6	13 15 0—	+ 18,54	+ 60,7
1817	105	6	1 28,9	15 23 14—	+ 18,53	— 1,3
1820	106,	5	1 31,0	4 28 19—	+ 18,45	— 2,2
1821	107	5.6	Ead. cum 2 ♈	19 17 39—	+ 18,43	+ 54,7
. .	108	8	. . . .	22 5 44—	. . .	. . .
1822	109	6	1 34,0	19 4 49—	+ 18,35	+ 0,1
1823	110 d	5	1 34,8	8 8 56—	+ 18,33	+ 2,3
. .	. . .	7	Ead. cum 1 ♈	21 16 38—	+ 18,19	— 0,7
. .	. . . .	8	. . . .	27 49 44—	. . .	. . .
1826	111 ξ	5.6	1 43,9	2 11 39—	+ 18,02	+ 4,6
1828	. . .	6.7	1 48,7	11 19 13—	+ 17,80	— 1,6
1829	112	6	1 49,8	2 8 6—	+ 17,76	— 26,8
1830	113 α	4	1 51,7	1 47 37—	+ 17,68	— 2,2

Tabula praeceſſionis annuae fixarum in aſcenſione recta ad annum 1850 conſtructa, poſita praeceſſione media in longitudine = 50,″07756.

Argum. Aſcenſio recta.						Argumentum: Declinatio.					
ſi declinatio			ſi declinatio			3°	6°	9°	12°	15°	18°
bor.		auſtr.	bor.		auſtr.						
9s	0°	3s	9s	0°	3s	″ 44,858	″ 43,803	″ 42,737	″ 41,653	″ 40,545	″ 39,405
	5			25		44,862	43,812	42,749	41,670	40,566	39,430
	10			20		44,874	43,835	42,786	41,718	40,627	39,504
	15			15		44,894	43,875	42,845	41,798	40,728	39,627
	20			10		44,921	43,930	42,929	41,910	40,868	39,797
	25			5		44,956	44,006	43,034	42,140	41,047	40,014
10	0	4	8	0	2	44,998	44,085	43,162	42,323	41,263	40,276
	5			25		45,048	44,184	43,311	42,523	41,515	40,581
	10			20		45,103	44,295	43,479	42,648	41,799	40,926
	15			15		45,162	44,419	43,666	42,899	42,115	41,309
	20			10		45,232	44,555	43,869	43,173	42,456	41,728
	25			5		45,305	44,700	44,088	43,467	42,831	42,178
11	0	5	7	0	1	45,382	44,856	44,322	43,780	43,226	42,656
	5			25		45,463	45,018	44,567	44,109	43,641	43,159
	10			20		45,548	45,187	44,820	44,452	44,073	43,683
	15			15		45,635	45,362	45,086	44,806	44,519	44,224
	20			10		45,724	45,541	45,356	45,168	44,975	44,778
	25			5		45,815	45,734	45,630	45,536	45,439	45,340
0	0	6	6	0	0	45,906	45,906	45,906	45,906	45,906	45,906
	5			25		45,998	46,079	46,183	46,277	46,374	46,473
	10			20		46,088	46,272	46,457	46,645	46,837	47,035
	15			15		46,178	46,451	46,727	47,007	47,294	47,589
	20			10		46,265	46,626	46,993	47,361	47,740	48,130
	25			5		46,350	46,795	47,246	47,704	48,172	48,654
1	0	7	5	0	11	46,431	46,958	47,491	48,033	48,587	49,157
	5			25		46,508	47,113	47,724	48,346	48,982	49,635
	10			20		46,580	47,258	47,944	48,640	49,357	50,085
	15			15		46,650	47,393	48,147	48 914	49,698	50,504
	20			10		46,710	47,517	48,334	49,164	50,013	50,887
	25			5		46,765	47,629	48,502	49,390	50,298	51,232
2	0	8	4	0	10	46,815	47,728	48,651	49,590	50,550	51,537
	5			25		46,857	47,812	48,779	49,673	50,765	51,799
	10			20		46,892	47,883	48,884	49,903	50,944	52,016
	15			15		46,919	47,938	48,968	50,014	51,085	52,186
	20			10		46,939	47,977	49,027	50,095	51,186	52,309
	25			5		46,951	48,001	49,063	50,143	51,247	52,383
3	0	9	3	0	9	46,955	48,009	49,076	50,159	51,268	52,408

abulaprae o effionis a nnuae fixarum in aſcenſione recta ad annum 1850 conſtructa, poſita praeceſſione media in longitudine = 50,″07736.

Argum. Aſcenſio recta.						Argumentum: Declinatio.					
ſi declinatio			ſi declinatio								
bor.		auſtr.	bor.		auſtr.	21°	24°	27°	30°	33°	36°
9ˢ	0°	3ˢ	9ˢ	0°	3ˢ	38,″225	36,″997	35,″711	34,″354	32,″912	31,″369
	5			25		38,254	37,031	35,750	34,398	32,961	31,426
	10			20		38,342	37,133	35,866	34,529	33,109	31,590
	15			15		38,487	37,301	36,058	34,747	35,355	31,864
	20			10		38,688	37,535	36,326	35,051	33,696	32,245
	25			5		38,945	37,832	36,666	35,436	34,129	32,731
10	0	4	8	0	2	39,254	38,191	37,077	35,902	34,653	33,316
	5			25		39,614	38,609	37,555	36,443	35,262	33,998
	10			20		40,022	39,082	38,096	37,057	35,952	34,770
	15			15		40,475	39,607	38,697	37,737	36,718	35,627
	20			10		40,969	40,180	39,353	38,480	37,554	36,562
	25			5		41,500	40,796	40,058	39,280	38,453	37,568
11	0	5	7	0	1	42,066	41,452	40,808	40,130	39,409	38,637
	5			25		42,660	42,141	41,597	41,024	40,415	39,762
	10			20		43,279	42,859	42,419	41,955	41,462	40,934
	15			15		43,918	43,600	43,267	42,916	42,543	42,145
	20			10		44,572	44,359	44,135	43,900	43,650	43,382
	25			5		45,237	45,147	45,017	44,899	44,773	44,639
0	0	6	6	0	0	45,906	45,906	45,906	45,906	45,906	45,906
	5			25		46,575	46,665	46,795	46,913	47,039	47,173
	10			20		47,240	47,453	47,677	47,912	48,162	48,430
	15			15		47,894	48,212	48,545	48,896	49,267	49,669
	20			10		48,535	48,953	49,393	49,857	50,350	50,878
	25			5		49,152	49,671	50,215	50,788	51,397	52,050
1	0	7	5	0	11	49,746	50,360	51,004	51,682	52,403	53,175
	5			25		50,312	51,016	51,754	52,532	53,359	54,244
	10			20		50,843	51,632	52,459	53,332	45,258	55,250
	15			15		51,337	52,205	53,115	54,075	55,094	56,185
	20			10		51,790	52,730	53,798	54,755	55,860	57,041
	25			5		52,198	53,203	54,257	55,369	56,550	57,814
2	0	8	4	0	10	52,558	53,621	54,755	55,910	57,159	58,496
	5			25		52,867	53,980	55,146	56,376	57,683	59,081
	10			20		53,124	54,277	55,486	56,761	58,116	59,567
	15			15		53,325	54,511	55,754	57,065	58,457	59,948
	20			10		53,470	54,679	55,946	57,283	58,705	60,222
	25			5		53,558	54,780	56,062	57,414	58,851	60,389
3	0	9	3	0	9	53,587	54,815	56,101	57,451	58,900	60,443

TABVLA I.

Refractiones aſtronomicae mediae ſecundum cl. de la Place pro altitudine Barometri 28 p. 0,9 l. pariſin. et gradu Thermometri Reaumuriani + 8°, vel pro altitudine Barometri 29,93 p. anglican. et gradu Thermometri Fahrenheitiani 50°.

Diſt. a vert. app.	Altit. appar.	Refractio media.	Differ.	Diſt. a vert. app.	Altit. appar.	Refractio media.	Differ.
°	°	′ ″	″	°	°	′ ″ ″	″
0	90	0 0,0	1,0	40	50	0 48,9 48,9	1,7
1	89	0 1,0	1,0	41	49	0 50,6 50,6	1,8
2	88	0 2,0	1,1	42	48	0 52,4 52,4	1,9
3	87	0 3,1	1,0	43	47	0 54,3 54,3	1,9
4	86	0 4,1	1,0	44	46	0 56,2 56,2	2,0
5	85	0 5,1	1,0	45	45	0 58,2 58,2	2,1
6	84	0 6,1	1,1	46	44	1 0,3 60,3	2,1
7	83	0 7,2	1,0	47	43	1 2,4 62,4	2,2
8	82	0 8,2	1,0	48	42	1 4,6 64,6	2,3
9	81	0 9,2	1,1	49	41	1 6,9 66,9	2,4
10	80	0 10,3	1,0	50	40	1 9,3 69,3	2,5
11	79	0 11,3	1,1	51	39	1 11,8 71,8	2,6
12	78	0 12,4	1,1	52	38	1 14,4 74,4	2,8
13	77	0 13,5	1,0	53	37	1 17,2 77,2	2,9
14	76	0 14,5	1,1	54	36	1 20,1 80,1	3,0
15	75	0 15,6	1,1	55	35	1 23,1 83,1	3,1
16	74	0 16,7	1,1	56	34	1 26,2 86,2	3,4
17	73	0 17,8	1,1	57	33	1 29,6 89,6	3,5
18	72	0 18,9	1,1	58	32	1 33,1 93,1	3,6
19	71	0 20,0	1,2	59	31	1 36,7 96,7	3,9
20	70	0 21,2	1,2	60	30	1 40,6 100,6	4,2
21	69	0 22,4	1,1	61	29	1 44,8 104,8	4,4
22	68	0 23,5	1,2	62	28	1 49,2 109,2	4,7
23	67	0 24,7	1,2	63	27	1 53,9 113,9	5,0
24	66	0 25,9	1,3	64	26	1 58,9 118,9	5,4
25	65	0 27,2	1,2	65	25	2 4,3 124,3	5,9
26	64	0 28,4	1,3	66	24	2 10,2 130,2	6,3
27	63	0 29,7	1,3	67	23	2 16,5 136,5	6,7
28	62	0 31,0	1,3	68	22	2 23,2 143,2	7,4
29	61	0 32,3	1,3	69	21	2 30,6 150,6	8,2
30	60	0 33,6	1,4	70	20	2 38 8 158,8	8,9
31	59	0 35,0	1,4	71	19	2 47,7 167,7	9,9
32	58	0 36,4	1,4	72	18	2 57,6 177,6	10,9
33	57	0 37,8	1,5	73	17	3 8,5 188,5	12,1
34	56	0 39,3	1,5	74	16	3 20,6 200,6	13,7
35	55	0 40,8	1,5	75	15	3 34,3 214,3	15,5
36	54	0 42,3	1,6	76	14	3 49,8 229,8	17,7
37	53	0 43,9	1,6	77	13	4 7,5 247,5	20,4
38	52	0 45,5	1,7	78	12	4 27,9 267,9	23,8
39	51	0 47,2	1,7	79	11	4 51,7 291,7	28,1
40	50	0 48,9		80	10	5 19,8 319,8	

TABVLA I.

Refractiones aſtronomicae mediae ſecundum Cl. de la Place pro altitudine Barometri 28 p. 0,9 l. pariſin. et gradu Thermometri Réaumuriani + 8°, vel pro altitudine Barometri 29,93 p. anglican. et gradu Thermometri Fahrenheitiani 50°.

Diſt. a vert. app.	Altit. appar.	Refractio media.	Differentia	Diſt. a vert. app.	Altit. appar.	Refractio media.	Differentia
° ′	° ′	′ ″	″	° ′	° ′	′ ″	″
80 0	10 0	5 19,8	319,8	86 0	4 0	11 48,3	708,3
			5,3				23,0
10	50	5 25,1	325,1	10	50	12 11,3	731,3
			5,3				24,3
20	40	5 30,4	330,4	20	40	12 35,6	755,6
			5,5				25,7
30	30	5 35,9	335,9	30	30	13 1,3	781,3
			5,6				27,2
40	20	5 41,5	341,5	40	20	13 28,5	808,5
			5,9				28,8
50	10	5 47,4	347,4	50	10	13 57,3	837,3
			6,1				30,8
81 0	9 0	5 53,5	353,5	87 0	3 0	14 28,1	868,1
			6,4				32,8
10	50	5 59,9	359,9	10	50	15 0,9	900,9
			6,5				35,1
20	40	6 6,4	366,4	20	40	15 36,0	936,0
			6,7				37,4
30	30	6 13,1	373,1	30	30	16 13,4	973,4
			6,9				39,8
40	20	6 20,0	380,0	40	20	16 53,2	1013,2
			7,1				43,1
50	10	6 27,1	387,1	50	10	17 36,3	1056,3
			7,3				45,9
82 0	8 0	6 34,4	394,4	88 0	2 0	18 22,2	1102,2
			7,5				49,3
10	50	6 41,9	401,9	10	50	19 11,5	1151,5
			7,7				53,3
20	40	6 49,6	409,6	20	40	20 4,8	1204,8
			8,1				57,1
30	30	6 57,7	417,7	30	30	21 1,9	1261,9
			8,6				61,5
40	20	7 6,4	426,3	40	20	22 3,4	1323,4
			9,0				66,2
50	10	7 15,3	435,3	50	10	23 9,6	1389,6
			9,4				71,6
83 0	7 0	7 24,7	444,7	89 0	1 0	24 21,2	1461,2
			10,0				77,4
10	50	7 34,7	454,7	10	50	25 38,6	1538,6
			10,2				83,6
20	40	7 44,9	464,9	20	40	27 2,2	1622,2
			10,7				89,8
30	30	7 55,6	475,6	30	30	28 32,0	1712,0
			11,0				97,3
40	20	8 6,6	486,6	40	20	30 9,3	1809,3
			11,6				105,0
50	10	8 18,2	498,2	50	10	31 54,3	1914,3
			11,7				112,0
84 0	6 0	8 29,9	509,9	90 0	0 0	33 46,3	2026,3
			12,4				119,6
10	50	8 42,3	522,3	10	10	35 45,9	2145,9
			13,0				127,7
20	40	8 55,3	535,3	20	20	37 53,6	2273,6
			13,7				136,4
30	30	9 9,0	549,0	30	30	40 10,0	2410,0
			14,4				
40	20	9 23,4	563,4				
			15,0				
50	10	9 38,4	578,4				
			15,9				
85 0	5 0	9 54,3	594,3				
			16,6				
10	50	10 10,9	610,9				
			17,4				
20	40	10 28,3	628,3				
			18,4				
30	30	10 46,7	646,7				
			19,4				
40	20	11 6,1	666,1				
			20,5				
50	10	11 26,6	686,6				
			21,7				
86 0	4 0	11 48,3	708,3				

TABVLA II.

Pro reductione refractionum mediarum ad refractiones veras, ſecundum altitudines Barometri in partibus pedis pariſienſis, nec non anglicani.

Altit. Barom. Pariſ. P. L.	Logarithmi Factoris.	Altit. Barom. Angl. P.	Logarithmi Factoris.
26 0	9,9666	27,5	9,9633
1	9,9680	27,6	9,9648
2	9,9694	27,7	9,9663
3	9,9708	27,8	9,9679
4	9,9721	27,9	9,9694
5	9,9735	28,0	9,9710
6	9,9749	28,1	9,9725
7	9,9763	28,2	9,9741
8	9,9776	28,3	9,9757
9	9,9790	28,4	9,9722
10	9,9803	28,5	9,9787
11	9,9817	28,6	9,9802
27 0	9,9830	28,7	9,9817
1	9,9843	28,8	9,9832
2	9,9856	28,9	9,9847
3	9,9869	29,0	9,9862
4	9,9883	29,1	9,9876
5	9,9896	29,2	9,9891
6	9,9909	29,3	9,9906
7	9,9922	29,4	9,9921
8	9,9935	29,5	9,9935
9	9,9948	29,6	9,9950
10	9,9961	29,7	9,9965
11	9,9975	29,8	9,9980
28 0	9,9988	29,9	9,9995
1	0,0001	30,0	0,0009
2	0,0014	30,1	0,0024
3	0,0027	30,2	0,0038
4	0,0039	30,3	0,0053
5	0,0053	30,4	0,0067
6	0,0066	30,5	0,0081
7	0,0078	30,6	0,0096
8	0,0091	30,7	0,0110
9	0,0103	30,8	0,0124
10	0,0116	30,9	0,0138
11	0,0128	31,0	0,0152
29 0	0,0141		

TABVLA III.

Pro reductione refractionum mediarum ad refractiones veras ſecundum Thermometrum Réaumurianum.

Grad. Therm. Réaum.	Logarithmi Factoris.	Grad. Therm. Réaum.	Logarithmi Factoris.
+ 30°	9,9566	0	0,0168
29	9,9585	— 1	0,0189
28	9,9604	2	0,0211
27	9,9623	3	0,0233
26	9,9642	4	0,0254
25	9,9661	5	0,0275
24	9,9681	6	0,0297
23	9,9700	7	0,0320
22	9,9719	8	0,0342
21	9,9739	9	0,0364
20	9,9758	10	0,0386
19	9,9778	11	0,0408
18	9,9798	12	0,0431
17	9,9818	13	0,0453
16	9,9838	14	0,0476
15	9,9858	15	0,0499
14	9,9878	16	0,0522
13	9,9898	17	0,0545
12	9,9918	18	0,0568
11	9,9938	19	0,0592
10	9,9958	20	0,0615
9	9,9979	21	0,0639
8	9,0000	22	0,0662
7	0,0020	23	0,0686
6	0,0041	24	0,0710
5	0,0072	25	0,0734
4	0,0083	26	0,0759
3	0,0104	27	0,0782
2	0,0126	28	0,0807
1	0,0147	29	0,0831
0	0,0168	30	0,0856

TABVLA III.

Pro reductione refractionum mediarum ad refractiones veras ſecundum Thermometrum Fahrenheitianum.

Grad. Therm. Fahr.	Logarithmi Factoris.	Grad. Therm. Fahr.	Logarithmi Factoris.	Grad. Therm. Fahrenh.	Logarithmi Factoris.	Grad. Therm. Fahr.	Logarithmi Factoris.
+ 95°	9,9604	+ 63°	9,9882	+ 31°	0,0177	— 1°	0,0492
94	9,9612	62	9,9891	30	0,0187	2	0,0502
93	9,9620	61	9,9900	29	0,0196	3	0,0512
92	9,9629	60	9,9909	28	0,0206	4	0,0522
91	9,9638	59	9,9918	27	0,0215	5	0,0532
90	9,9647	58	9,9927	26	0,0225	6	0,0543
89	9,9655	57	9,9936	25	0,0235	7	0,0553
88	9,9664	56	9,9945	24	0,0244	8	0,0564
87	9,9672	55	9,9954	23	0,0254	9	0,0574
86	9,9681	54	9,9963	22	0,0264	10	0,0585
85	9,9689	53	9,9972	21	0,0273	11	0,0595
84	9,9698	52	9,9981	20	0,0283	12	0,0605
83	9,9706	51	9,9990	19	0,0293	13	0,0615
82	9,9715	50	0,0000	18	0,0302	14	0,0626
81	9,9723	49	0,0009	17	0,0312	15	0,0636
80	9,9732	48	0,0018	16	0,0322	16	0,0647
79	9,9741	47	0,0027	15	0,0332	17	0,0657
78	9,9749	46	0,0036	14	0,0341	18	0,0668
77	9,9758	45	0,0046	13	0,0351	19	0,0678
76	9,9766	44	0,0055	12	0,0361	20	0,0689
75	9,9775	43	0,0064	11	0,0371	21	0,0699
74	9,9784	42	0,0073	10	0,0381	22	0,0710
73	9,9793	41	0,0083	9	0,0391	23	0,0720
72	9,9802	40	0,0092	8	0,0401	24	0,0731
71	9,9811	39	0,0102	7	0,0411	25	0,0742
70	9,9820	38	0,0111	6	0,0421	26	0,0752
69	9,9829	37	0,0120	5	0,0431	27	0,0763
68	9,9838	36	0,0130	4	0,0441	28	0,0774
67	9,9846	35	0,0139	3	0,0451	29	0,0785
66	9,9855	34	0,0148	2	0,0461	30	0,0796
65	9,9864	33	0,0158	1	0,0471	31	0,0807
64	9,9873	32	0,0168	0	0,0482	32	0,0818

TABVLA IV.

Parallaxis Solis in Circulo verticali posita media 8,″7.

Altitudo.	Diff. a vert.	1 Januar.	1 Februar Decemb.	1 Martii Novemb.	1 Aprilis Octob.	1 Maji Septemb.	1 Junii 1 Augusti	1 Julii
°	°	″	″	″	″	″	″	″
0	90	8,85	8,82	8,77	8,70	8,63	8,58	8,55
4	86	8,82	8,80	8,75	8,68	8,61	8,56	8,53
8	82	8,76	8,73	8,69	8,62	8,55	8,50	8,47
12	78	8,66	8,63	8,58	8,51	8,44	8,39	8,36
16	74	8,51	8,48	8,43	8,36	8,30	8,25	8,22
20	70	8,32	8,29	8,24	8,18	8,11	8,06	8,04
24	66	8,09	8,06	8,01	7,95	7,88	7,84	7,81
28	62	7,81	7,79	7,74	7,68	7,62	7,58	7,55
32	58	7,51	7,48	7,44	7,38	7,32	7,28	7,25
36	54	7,16	7,14	7,10	7,04	6,98	6,94	6,92
40	50	6,78	6,76	6,72	6,66	6,61	6,57	6,55
44	46	6,37	6,35	6,31	6,26	6,21	6,17	6,15
48	42	5,92	5,90	5,87	5,82	5,78	5,74	5,72
52	38	5,45	5,43	5,40	5,36	5,31	5,28	5,26
56	34	4,95	4,93	4,90	4,87	4,83	4,80	4,78
58	32	4,69	4,67	4,65	4,61	4,57	4,55	4,53
60	30	4,43	4,41	4,39	4,35	4,32	4,29	4,28
62	28	4,15	4,14	4,12	4,09	4,05	4,03	4,01
64	26	3.88	3,87	3,84	3,81	3,78	3,76	3,75
66	24	3,60	3,59	3,57	3,54	3,51	3,49	3,48
68	22	3,32	3,31	3,29	3,26	3,23	3,22	3,20
70	20	3,04	3,02	3,00	2,98	2,95	2,93	2,92
72	18	2,74	2,73	2,71	2,69	2,67	2,65	2,64
74	16	2,44	2,43	2,42	2,40	2,38	2,37	2,36
76	14	2,14	2,13	2,12	2,10	2,09	2,08	2,07
78	12	1,84	1,83	1,82	1,81	1,79	1,78	1,78
80	10	1,54	1,53	1,52	1,51	1,50	1,49	1,49
82	8	1,23	1,23	1,22	1,21	1,20	1,19	1,19
84	6	0,93	0,92	0,92	0,91	0,90	0,90	0,89
86	4	0,62	0,62	0,61	0,61	0,60	0,60	0,60
88	2	0,31	0,31	0,31	0,30	0,30	0,30	0,30
90	0	0,00	0,00	0,00	0,00	0,00	0,00	0,00

TABVLAE SOLARES

AD

CONVERTENDA TEMPORA ASTRONOMICA

SIDEREA, SOLARIA VERA ET MEDIA

CVM

TABVLIS NONNVLLIS

EO PERTINENTIBVS.

TABVLA I.

Specularum aſtronomicarum differentia a meridiano Seebergenſi et latitudo geographica cum reductione epocharum.

Specularum nomina.	Differ. Merid. in tempore.	Latitudo.	Reductio epoch. mot. med. ☉ in temp.
	h ′ ″	° ′ ″	″
Berolinum	0 10 30 or.	51 31 45	— 1,724
Blenheim	0 48 19 oc.	51 50 29	+ 7,936
Bononia (*Bologna*)	0 2 27 or.	44 29 36	— 0,401
Brunsvicum	0 0 48 oc.	52 15 29	+ 0,131
Buda (*Ofen*)	0 33 14 or.	47 29 44	— 5,459
Conimbrica (*Coimbra*)	1 16 35 oc.	40 12 30	+ 12,580
Cremifanum (*Cremsmünſter*)	0 13 36 or.	48 3 29	— 2,233
Dorpatum	1 3 59 or.	58 22 48	— 10,538
Gedanum (*Danzig*)	0 31 36 or.	54 20 48	— 5,190
Gotha, Obſerv. Seebergenſe	0 0 0	50 56 8	0,000
Gottinga	0 3 14 oc.	51 31 54	+ 0,550
Grenovicum (*Greenwich*)	0 42 56 oc.	51 28 39	+ 7,052
Havnia (*Coppenhagen*)	0 7 22 or.	55 41 4	— 1,208
Holmia (*Stockholm*)	0 29 17 or.	59 20 31	— 4,809
Iſeberga (*Eiſenberg*) Obſerv.	0 4 54 or.	50 58 0	— 0,804
Lilienthalium	0 7 21 oc.	53 8 25	+ 1,206
Lipſia	0 6 24 or.	51 20 44	— 1,050
Londinum, St. Paul.	0 43 18 oc.	51 30 49	+ 7,112
Lugdunum Batav. (*Leyden*)	0 25 1 oc.	52 9 30	+ 4,103
Lutetia Pariſiorum, O R.	0 33 35 oc.	48 50 14	+ 5,516
Madritum	0 57 43 oc.	40 25 18	+ 9,480
Manhemium	0 9 3 oc.	49 29 18	+ 1,485
Maſſilia	0 21 27 oc	43 17 49	+ 3,524
Mediolanum (*Brera*)	0 6 11 oc.	45 27 57	+ 1,014
Mons Peſſulanus (*Montpellier*)	0 27 25 oc.	43 36 29	+ 4,505
Montalbanum (*Montauban*)	0 37 32 oc.	44 0 50	+ 6,104
Monachium T. M. V. (*München*)	0 3 24 or.	48 8 20	— 0,557
Neapolis	0 14 9 or.	40 50 15	— 2,524
Oxonium (*Oxford*)	0 47 56 oc.	51 45 40	+ 7,873
Panormum (*Palermo*)	0 10 31 or.	38 6 45	— 1,727
Patavium (*Padua*)	0 4 35 or.	45 23 40	— 0,752
Petropolis (*Petersburg*)	1 18 17 or.	59 56 23	— 12,858
Piſa	0 1 30 oc.	43 43 7	+ 0,244
Praga	0 14 45 or.	50 5 19	— 2,422
Toloſa (*Toulouſe*)	0 37 10 oc.	43 35 46	+ 6,104
Ultrajectum (*Utrecht*)	0 22 29 oc.	52 5 12	+ 3,686
Ulyſſipo (*Liſſabon*)	1 19 30 oc.	38 42 59	+ 13,085
Vienna, Obſ. C. R. Univ.	0 22 35 or.	48 12 36	— 3,708
Vilna	0 58 14 or.	54 41 2	— 9,565
Vivarium (*Viviers*)	0 42 2 oc.	44 29 19	+ 3,947

+ 0,83

TABVLA II

Mediorum motuum ſolis in tempore in annis Julianis completis.

Anni.	Motus AB. med. ſolis in temp.	Arg. I	Arg. II	Arg. III	Arg. IV	Arg. V	Arg. VI	Arg. VII	Arg. VIII	Arg. IX	Arg. X	Arg. ☌
	H ′ ″											
1	23 59 2,693	999	360	625	468	915	965	251	63	84	34	54
2	23 58 5,387	999	720	250	936	830	931	501	125	168	68	107
3	23 57 8,080	998	80	875	405	745	896	751	188	252	102	161
4 B.	0 0 7,328	0	474	502	873	665	864	4	253	337	136	215
5	23 59 10,021	999	834	127	342	578	830	254	315	421	170	269
6	23 58 12,714	998	194	752	810	493	796	504	378	506	204	322
7	23 57 15,407	998	554	377	278	408	762	754	442	590	238	376
8 B.	0 0 14,656	0	948	4	746	325	728	8	507	675	272	430
9	23 59 17,349	999	308	629	215	240	694	258	569	759	306	483
10	23 58 20,043	998	668	254	683	155	660	508	632	844	340	537
11	23 57 22,736	998	28	879	151	70	626	758	696	928	374	591
12 B.	0 0 21,984	0	422	506	620	988	592	12	760	12	408	645
13	23 59 24,677	999	782	131	88	903	558	262	823	96	442	698
14	23 58 27,370	998	142	756	556	818	524	512	886	180	476	752
15	23 57 30,064	998	502	381	25	733	490	762	948	264	510	806
16 B.	0 0 29,312	0	896	8	493	651	456	16	14	349	544	860
17	23 59 32,005	999	257	633	961	566	422	266	77	433	578	913
18	23 58 34,699	998	617	258	430	481	388	516	138	517	612	967
19	23 57 37,392	998	977	883	898	396	354	766	201	602	646	21
20 B.	0 0 36,640	0	371	510	366	513	320	20	268	687	680	75
21	23 59 39,333	999	731	135	834	228	286	270	331	771	714	128
22	23 58 42,027	999	91	760	303	143	252	520	394	855	748	182
23	23 57 44,720	998	451	385	771	58	218	770	457	939	782	235
24 B.	0 0 43,968	0	845	12	239	976	184	24	523	24	816	289
25	23 59 46,661	999	205	637	708	891	150	274	586	108	850	343
26	23 58 49,355	999	565	262	176	806	116	524	649	192	884	396
27	23 57 52,049	998	925	887	644	721	82	774	712	276	918	450
28 B.	0 0 51,297	0	319	514	112	639	48	28	777	361	952	503
29	23 59 53,991	999	679	139	580	554	14	278	839	445	986	556
30	23 58 56,684	999	39	764	48	469	980	528	902	529	20	609
35	23 58 6,704	998	873	891	390	47	816	782	217	950	190	879
40 B.	0 1 15,280	1	741	20	732	627	642	40	537	374	359	149
45	0 0 23,300	0	575	147	74	205	472	294	853	795	529	418
50	23 59 33,321	999	409	274	414	883	302	548	169	216	699	686
55	23 58 43,343	999	243	401	756	461	132	802	485	637	869	955
60 B.	0 1 49,920	1	112	531	98	941	902	62	805	69	39	224
70	0 0 9,962	0	780	785	781	97	622	570	458	903	379	761
80 B.	0 2 26,560	2	482	41	465	254	283	82	72	747	719	298
100 B.	0 3 3,200	3	853	551	831	567	603	102	540	434	399	373
100 C.	23 59 6,646	999	819	549	829	565	903	98	344	434	399	373

TABVLA III.

Epochae mediorum motuum solis in tempore ad meridianum observatorii Seebergensis.

Anni Gregor.	Ascensio recta med. solis in temp.	Arg. I	Arg. II	Arg. III	Arg. IV	Arg. V	Arg. VI	Arg. VII	Arg. VIII	Arg. IX	Arg. X	Arg. Ω
	h ′ ″											
1740 B.	1 8 41 37,073	779	76	597	534	111	976	915	208	167	303	684
1741	18 40 39,767	779	436	222	2	26	941	166	271	251	537	737
1742	18 39 42,461	778	796	847	470	941	906	417	334	335	371	791
1743	18 38 45,155	778	156	472	938	856	871	668	397	419	405	845
1744 B.	18 41 44,403	779	550	99	407	774	840	919	462	504	439	899
1745	18 40 47,096	779	910	724	875	689	805	170	525	588	473	952
1746	18 39 49,790	778	270	349	343	604	770	421	588	672	507	6
1747	18 38 52,482	778	630	974	811	519	735	672	651	756	541	60
1748 B.	18 41 51,729	779	24	601	280	437	704	923	716	841	575	114
1749	18 40 54,423	779	384	226	748	352	669	174	779	925	609	168
1750	18 39 57,116	778	744	851	216	267	634	425	842	9	643	222
1751	18 38 59,809	778	104	476	684	182	599	676	905	93	677	275
1752 B.	18 41 59,058	779	498	103	153	100	568	927	970	178	711	329
1753	18 41 1,751	779	858	728	621	15	533	178	33	262	745	582
1754	18 40 4,444	778	218	353	89	930	498	429	96	346	779	436
1755	18 39 8,138	778	578	978	557	845	463	680	159	430	813	490
1756 B.	18 42 6,387	779	972	605	26	762	432	951	224	516	847	544
1757	18 41 9,080	779	332	259	494	677	397	182	287	600	881	597
1758	18 40 11,773	778	692	856	962	592	362	433	350	684	915	651
1759	18 39 14,467	778	52	480	431	507	328	684	413	768	949	705
1760 B.	18 42 13,712	779	447	107	900	424	297	955	478	854	983	759
1761	18 41 16,405	779	807	732	368	339	262	186	541	938	17	812
1762	18 40 19,099	778	167	557	836	254	227	437	604	22	51	866
1763	18 39 21,792	778	527	982	304	169	192	688	667	106	85	920
1764 B.	18 42 21,041	780	921	609	773	87	161	939	732	191	119	974
1765	18 41 23,734	779	281	234	241	2	126	190	795	275	153	27
1766	18 40 26,427	778	641	859	709	917	91	441	858	559	187	81
1767	18 39 29,121	778	1	484	177	832	56	692	921	445	221	135
1768 B.	18 42 28,369	780	395	111	646	749	25	943	986	528	255	189
1769	18 41 31,063	779	755	736	114	664	990	194	49	612	289	242
1770	18 40 33,756	779	115	361	582	579	955	445	112	696	323	296
1771	18 39 36,449	778	475	986	50	494	920	696	175	780	357	350
1772 B.	18 42 35,698	780	869	613	319	412	889	947	240	866	391	403
1773	18 41 38,391	779	229	238	987	327	854	198	303	950	425	457
1774	18 40 41,085	779	589	863	455	242	819	449	366	34	459	511
1775	18 39 43,778	778	949	488	923	157	784	700	429	118	593	565
1776	18 42 43,027	780	343	115	393	75	753	950	494	203	527	618
1777	18 41 45,720	779	703	740	861	990	718	201	557	287	561	672
1778	18 40 48,413	779	63	365	329	905	683	452	620	371	595	726
1779	18 39 51,106	778	423	990	797	820	649	705	683	455	629	779

TABVLA III.

Epochae mediorum motuum ſolis in tempore ad meridianum obſervatorii SEEBERGENSIS.

Anni Gregor.	Aſcenſio recta med. ſolis in temp.	Arg. I	Arg. II	Arg. III	Arg. IV	Arg. V	Arg. VI	Arg. VII	Arg. VIII	Arg. IX	Arg. X	Arg. Ω
	h ′ ″											
1780 B.	18 42 50,355	780	818	617	267	738	618	954	747	541	662	835
1781	18 41 53,047	779	178	242	735	655	583	205	810	625	696	887
1782	18 40 55,740	779	538	867	203	568	548	456	873	709	730	941
1783	18 39 58,433	778	898	492	671	485	513	707	936	793	764	994
1784 B.	18 42 57,681	780	292	119	140	401	482	958	0	878	798	48
1785	18 42 0,374	779	652	744	608	316	447	209	63	962	852	102
1786	18 41 3,067	779	12	369	76	231	412	460	126	46	866	156
1787	18 40 5,761	778	372	994	544	146	377	711	189	130	900	209
1788 B.	18 43 5,009	780	766	620	13	64	346	962	254	215	934	263
1789	18 42 7,703	779	126	245	481	979	311	213	317	299	968	317
1790	18 41 10,396	779	486	871	949	893	277	465	381	584	2	570
1791	18 40 13,089	778	846	496	317	808	240	714	444	468	36	424
1792 B.	18 43 12,338	780	240	123	886	726	210	966	507	553	70	478
1793	18 42 15,031	779	600	748	354	641	175	217	571	637	104	532
1794	18 41 17,725	779	960	375	822	556	141	467	634	721	138	585
1795	18 40 20,418	778	320	998	290	471	106	718	698	806	172	639
1796 B.	18 43 19,667	780	714	625	759	389	74	970	761	890	206	695
1797	18 42 22,360	779	74	250	227	304	39	221	824	974	240	747
1798	18 41 25,053	779	434	875	695	219	5	471	888	59	274	800
1799	18 40 27,747	778	794	500	163	134	970	722	951	143	308	854
1800 C.	18 39 30,438	778	154	124	631	49	936	971	14	227	342	908
1801	18 38 33,132	777	514	751	99	964	901	225	78	512	376	961
1802	18 37 35,825	776	874	376	567	879	866	476	141	396	410	15
1803	18 36 38,518	776	234	1	35	794	831	727	205	480	444	69
1804 B.	18 39 37,767	778	628	628	505	712	799	979	268	564	478	123
1805	18 38 40,450	777	988	253	973	627	765	229	331	649	512	176
1806	18 37 43,154	776	348	878	441	542	731	480	595	733	546	230
1807	18 36 45,847	776	708	503	909	457	696	730	458	817	580	284
1808 B.	18 39 45,096	778	102	130	378	374	664	982	522	902	614	338
1809	18 38 47,789	777	462	755	846	289	629	233	585	985	648	391
1810	18 37 50,482	776	822	380	314	204	595	484	649	71	682	445
1811	18 36 53,176	776	182	5	782	119	560	734	712	155	716	499
1812 B.	18 39 52,424	778	576	632	251	37	528	986	776	239	750	552
1813	18 38 55,118	777	936	257	719	952	493	237	839	323	784	606
1814	18 37 57,811	776	297	882	187	867	458	488	902	407	818	660
1815	18 37 0,505	776	657	507	655	782	423	739	965	491	852	713
1816 B.	18 39 59,753	778	51	133	124	700	392	990	29	576	886	767
1817	18 39 2,447	777	411	758	593	615	357	241	92	660	920	821
1818	18 38 5,140	776	771	383	61	530	322	492	155	744	954	875
1819	18 37 7,833	776	131	8	529	445	287	743	218	828	988	928

TABVLA III.

Epochae mediorum motuum solis in tempore ad meridianum observatorii Seebergensis.

Anni Gregor.	Ascensio recta med. solis in temp.	Arg. I	Arg. II	Arg. III	Arg. IV	Arg. V	Arg. VI	Arg. VII	Arg. VIII	Arg. IX	Arg. X	Arg. Ω
	h ' "											
1820 B.	18 40 7,079	778	525	656	998	362	256	994	283	915	22	982
1821	18 39 9,772	777	885	261	466	277	221	245	546	999	56	56
1822	18 38 12,465	777	245	886	934	192	186	496	409	85	90	90
1823	18 37 15,159	776	605	511	402	107	151	747	472	167	124	143
1824 B.	18 40 14,407	778	999	138	871	25	120	998	536	252	158	197
1825	18 39 17,101	777	359	763	339	940	85	249	599	336	192	251
1826	18 38 19,794	777	719	388	807	855	50	500	662	420	226	304
1827	18 37 22,487	776	79	13	275	770	15	751	725	504	260	358
1828 B.	18 40 21,736	778	473	640	744	688	984	2	789	589	294	412
1829	18 39 24,429	777	833	265	212	603	959	253	853	673	328	466
1830	18 38 27,123	777	193	890	680	518	914	503	917	759	362	519
1831	18 37 29,816	776	553	515	148	433	879	754	980	842	396	575
1832 B.	18 40 29,065	778	947	142	617	351	848	6	45	926	430	627
1833	18 39 31,758	778	307	767	85	266	815	257	106	10	464	681
1834	18 38 34,451	777	667	392	553	181	778	508	170	94	498	734
1835	18 37 37,145	776	27	17	21	96	745	759	233	178	532	788
1836 B.	18 40 36,393	778	421	644	490	14	712	10	297	264	566	842
1837	18 39 39,087	778	781	269	958	929	677	261	560	348	600	896
1838	18 38 41,780	777	141	894	426	844	642	512	423	432	634	949
1839	18 37 44,473	776	501	519	894	759	607	763	486	516	668	3
1840 B.	18 40 43,719	778	895	140	563	676	576	14	551	602	702	57
1841	18 39 46,412	778	255	771	851	591	541	265	614	686	736	111
1842	18 38 49,105	777	615	596	299	506	506	516	677	770	770	164
1843	18 37 51,799	776	975	21	767	421	471	767	740	854	804	218
1844 B.	18 40 51,047	778	569	648	256	336	450	18	805	939	838	272
1845	18 39 53,741	778	729	273	704	254	405	269	868	23	872	325
1846	18 38 56,439	777	89	898	172	169	370	520	931	107	905	379
1847	18 37 59,127	776	449	525	640	84	335	771	994	191	940	433
1848 B.	18 40 58,376	778	843	150	109	2	304	22	58	277	974	487
1849	18 40 1,069	778	203	775	577	917	269	272	121	361	8	540
1850	18 39 3,762	777	563	400	46	832	234	523	185	446	42	594
1851	18 38 6,456	776	923	25	514	747	199	774	248	530	76	648
1852 B.	18 41 5,705	779	317	652	982	663	168	26	312	615	110	702
1853	18 40 8,398	778	677	277	450	580	153	277	575	699	144	755
1854	18 39 11,091	777	37	902	918	495	68	528	458	785	177	809
1855	18 38 13,784	776	397	527	386	410	05	779	501	867	211	863
1856 B.	18 41 13,033	779	791	154	855	328	32	50	566	952	246	916
1857	18 40 15,593	778	151	779	325	243	997	281	629	56	280	970
1858	18 39 18,420	777	511	404	791	158	962	532	692	120	314	24
1859	18 38 21,113	776	871	29	259	73	927	783	755	204	348	77

TABVLA IV

Mediorum motuum ſolis in tempore pro diebus menſium.

Dies ann. com.	JANVARIVS. Mot. med. ſolis in tempore.	Arg. Nod. ☾	FEBRVARIVS. Mot. med. ſolis in tempore.	Arg. Nod. ☾	MARTIVS. Mot. med. ſolis in tempore.	Arg. Nod. ☾
	☊ ° ′ ″		☊ ° ′ ″		☊ ° ′ ″	
0	0 0 0,000	0	2 2 13,215	5	3 52 36,764	9
1	0 3 56,555	0	2 6 9,771	5	3 56 33,319	9
2	0 7 53,110	0	2 10 6,326	5	4 0 29,875	9
3	0 11 49,666	0	2 14 2,881	5	4 4 26,430	9
4	0 15 46,221	1	2 17 59,436	5	4 8 22,986	9
5	0 19 42,777	1	2 21 55,992	5	4 12 19,541	9
6	0 23 39,332	1	2 25 52,547	6	4 16 16,096	10
7	0 27 35,887	1	2 29 49,102	6	4 20 12,651	10
8	0 31 32,442	1	2 33 45,658	6	4 24 9,207	10
9	0 35 28,998	1	2 37 42,214	6	4 28 5,762	10
10	0 39 25,553	1	2 41 38,768	6	4 32 2,317	10
11	0 43 22,108	2	2 45 35,324	6	4 35 58,873	10
12	0 47 18,664	2	2 49 31,879	6	4 39 55,428	10
13	0 51 15,219	2	2 53 28,435	7	4 43 51,984	10
14	0 55 11,775	2	2 57 24,990	7	4 47 48,539	11
15	0 59 8,330	2	3 1 21,545	7	4 51 45,094	11
16	1 3 4,885	2	3 5 18,101	7	4 55 41,649	11
17	1 7 1,440	3	3 9 14,656	7	4 59 38,205	11
18	1 10 57,996	3	3 13 11,211	7	5 3 34,760	11
19	1 14 54,551	3	3 17 7,766	7	5 7 31,315	11
20	1 18 51,107	3	3 21 4,321	7	5 11 27,871	11
21	1 22 47,662	3	3 25 0,877	8	5 15 24,426	11
22	1 26 44,217	3	3 28 57,432	8	5 19 20,982	11
23	1 30 40,772	3	3 32 53,988	8	5 23 17,537	12
24	1 34 37,328	4	3 36 50,543	8	5 27 14,092	12
25	1 38 33,883	4	3 40 47,098	8	5 31 10,648	12
26	1 42 30,438	4	3 44 43,653	8	5 35 7,203	12
27	1 46 26,994	4	3 48 40,209	8	5 39 3,759	12
28	1 50 23,549	4	3 52 36,764	9	5 43 0,314	12
29	1 54 20,105	4			5 46 56,869	12
30	1 58 16,660	4			5 50 53,425	12
31	2 2 13,215	5			5 54 49,980	12

A menſibus Ianuario et Februario anni biſſextilis ſumitur pro die data dies praecedens.

TABVLA IV

Mediorum motuum ſolis in tempore pro diebus menſium.

Dies ann. com.	APRILIS. Mot. med. ſolis in tempore.	Arg. Nod. ☾	MAJVS. Mot. med. ſolis in tempore.	Arg. Nod. ☾	JVNIVS. Mot. med. ſolis in tempore.	Arg. Nod. ☾
	H ′ ″		H ′ ″		H ′ ″	
1	5 58 46,535	13	7 57 3,195	18	9 59 16,410	22
2	6 2 43,091	13	8 0 59,749	18	10 3 12,965	22
3	6 6 39,646	13	8 4 56,305	18	10 7 9,521	22
4	6 10 36,201	13	8 8 52,861	18	10 11 6,075	22
5	6 14 32,756	13	8 12 49,416	18	10 15 2,630	22
6	6 18 29,312	13	8 16 45,971	18	10 18 59,186	22
7	6 22 25,867	14	8 20 42,527	18	10 22 55,741	23
8	6 26 22,422	14	8 24 39,082	19	10 26 52,296	23
9	6 30 18,977	14	8 28 35,637	19	10 30 48,852	23
10	6 34 15,533	14	8 32 32,193	19	10 34 45,407	23
11	6 38 12,089	14	8 36 28,748	19	10 38 41,962	23
12	6 42 8,644	14	8 40 25,302	19	10 42 38,518	23
13	6 46 5,199	15	8 44 21,859	19	10 46 35,073	24
14	6 50 1,754	15	8 48 18,414	19	10 50 31,628	24
15	6 53 58,309	15	8 52 14,969	19	10 54 28,184	24
16	6 57 54,864	15	8 56 11,525	20	10 58 24,739	24
17	7 1 51,420	15	9 0 8,080	20	11 2 21,293	24
18	7 5 47,975	15	9 4 4,635	20	11 6 17,850	24
19	7 9 44,530	16	9 8 1,193	20	11 10 14,405	25
20	7 13 41,086	16	9 11 57,746	20	11 14 10,960	25
21	7 17 37,642	16	9 15 54,301	20	11 18 7,516	25
22	7 21 34,196	16	9 19 50,857	20	11 22 4,071	25
23	7 25 30,752	16	9 23 47,412	20	11 26 0,626	25
24	7 29 27,307	16	9 27 43,967	21	11 29 57,182	25
25	7 33 23,863	17	9 31 40,523	21	11 33 53,738	26
26	7 37 20,418	17	9 35 37,078	21	11 37 50,292	26
27	7 41 16,973	17	9 39 33,632	21	11 41 46,848	26
28	7 45 13,529	17	9 43 30,188	21	11 45 43,403	26
29	7 49 10,084	17	9 47 26,744	21	11 49 39,958	26
30	7 53 6,640	17	9 51 23,299	21	11 53 36,514	26
31			9 55 19,855	21		

TABVLA IV.

Mediorum motuum ſolis in tempore pro diebus menſium.

Dies ann. com.	IVLIVS. Mot. med. ſolis in tempore.	Arg. Nod. ☾	AVGVSTVS. Mot. med. ſolis in tempore.	Arg. Nod. ☾	SEPTEMBER. Mot. med. ſolis in tempore.	Arg. Nod. ☾
	H ′ ″		H ′ ″		H ′ ″	
1	11 57 33,069	27	13 59 46,284	31	16 1 59,499	36
2	12 1 29,624	27	14 3 42,839	31	16 5 56,055	36
3	12 5 26,180	27	14 7 39,394	31	16 9 52,610	36
4	12 9 22,735	27	14 11 35,950	31	16 13 49,165	36
5	12 13 19,290	27	14 15 32,505	31	16 17 45,721	36
6	12 17 15,846	27	14 19 29,061	31	16 21 42,276	36
7	12 21 12,401	27	14 23 25,616	31	16 25 38,831	36
8	12 25 8,956	28	14 27 22,171	32	16 29 35,380	37
9	12 29 5,512	28	14 31 18,727	32	16 33 31,942	37
10	12 33 2,067	28	14 35 15,282	32	16 37 28,497	37
11	12 36 58,622	28	14 39 11,837	32	16 41 25,053	37
12	12 40 55,178	28	14 43 8,392	32	16 45 21,608	37
13	12 44 51,733	28	14 47 4,948	32	16 49 18,170	37
14	12 48 48,278	28	14 51 1,503	33	16 53 14,719	37
15	12 52 44,844	28	14 54 58,059	33	16 57 11,274	37
16	12 56 41,399	29	14 58 54,614	33	17 1 7,829	38
17	13 0 37,954	29	15 2 51,169	33	17 5 4,384	38
18	13 4 34,510	29	15 6 47,725	33	17 9 0,940	38
19	13 8 31,066	29	15 10 44,280	33	17 12 57,495	38
20	13 12 27,621	29	15 14 40,835	34	17 16 54,050	38
21	13 16 24,176	29	15 18 37,390	34	17 20 50,606	38
22	13 20 20,732	29	15 22 33,946	34	17 24 47,162	38
23	13 24 17,287	29	15 26 30,501	34	17 28 43,717	38
24	13 28 13,842	30	15 30 27,057	34	17 32 40,272	39
25	13 32 10,398	30	15 34 23,612	34	17 36 36,827	39
26	13 36 6,952	30	15 38 20,167	35	17 40 33,383	39
27	13 40 3,507	30	15 42 16,722	35	17 44 29,938	39
28	13 44 0,063	30	15 46 13,278	35	17 48 26,493	39
29	13 47 56,628	30	15 50 9,833	35	17 52 23,048	39
30	13 51 53,173	30	15 54 6,389	35	17 56 19,604	39
31	13 55 49,729	30	15 58 2,944	35		

TABVLA IV

Mediorum motuum ſolis in tempore pro diebus menſium.

Dies ann. com.	OCTOBER. Mot. med. ſolis in tempore.	Arg. Nod. ☾	NOVEMBER. Mot. med. ſolis in tempore.	Arg. Nod. ☾	DECEMBER. Mot. med. ſolis in tempore.	Arg. Nod. ☾
	h ′ ″		h ′ ″		h ′ ″	
1	18 0 16,159	40	20 2 29,574	45	22 0 46,054	49
2	18 4 12,714	40	20 6 25,950	45	22 4 42,589	49
3	18 8 9,270	40	20 10 22,485	45	22 8 39,145	49
4	18 12 5,825	40	20 14 19,040	45	22 12 35,700	49
5	18 16 2,380	40	20 18 15,596	45	22 16 32,255	49
6	18 19 58,936	40	20 22 12,151	45	22 20 28,811	49
7	18 23 55,491	41	20 26 8,695	45	22 24 25,366	49
8	18 27 52,046	41	20 30 5,267	46	22 28 21,921	50
9	18 31 48,602	41	20 34 1,816	46	22 32 18,477	50
10	18 35 45,158	41	20 37 58,371	46	22 36 15,032	50
11	18 39 41,712	41	20 41 54,926	46	22 40 11,587	50
12	18 43 38,267	41	20 45 51,482	46	22 44 8,143	50
13	18 47 34,833	42	20 49 48,037	46	22 48 4,678	50
14	18 51 31,378	42	20 53 44,592	46	22 52 1,255	51
15	18 55 27,934	42	20 57 41,148	47	22 55 57,809	51
16	18 59 24,488	42	21 1 37,703	47	22 59 54,365	51
17	19 3 21,044	42	21 5 34,259	47	23 3 50,920	51
18	19 7 17,600	42	21 9 30,814	47	23 7 47,475	51
19	19 11 14,155	43	21 13 27,369	47	23 11 44,031	51
20	19 15 10,710	43	21 17 23,925	47	23 15 40,586	52
21	19 19 7,266	43	21 21 20,480	47	23 19 37,141	52
22	19 23 3,821	43	21 25 17,035	47	23 23 33,696	52
23	19 27 0,376	43	21 29 13,590	48	23 27 30,252	52
24	19 30 56,932	43	21 33 10,146	48	23 31 26,807	52
25	19 34 53,487	44	21 37 6,701	48	23 35 23,363	52
26	19 38 50,042	44	21 41 3,257	48	23 39 19,917	53
27	19 42 46,598	44	21 44 59,813	48	23 43 16,473	53
28	19 46 43,153	44	21 48 56,368	48	23 47 13,028	53
29	19 50 39,708	44	21 52 52,925	48	23 51 9,585	53
30	19 54 36,265	44	21 56 49,479	48	23 55 6,130	53
31	19 58 32,820	44			23 59 2,693	54

TABVLA V.

Argumenta pro calculo aequationis temporis ad ultimam diem menſium.

Menſes.	Arg. I	Arg. II	Arg. III	Arg. IV	Arg. V	Arg. VI	Arg. VII	Arg. VIII	Arg. IX	Arg. X	Arg. Ω
28 Februarii	162	998	101	75	148	156	40	10	14	5	9
31 Martii	246	48	154	115	226	238	62	16	21	8	12
30 Aprilis	329	64	206	153	301	317	82	21	28	11	17
31 Maji	413	113	259	193	379	399	104	26	35	14	21
30 Junii	496	129	310	232	454	479	124	31	41	17	26
31 Julii	580	179	363	271	531	561	146	37	49	20	30
31 Auguſti	665	229	416	311	609	645	167	42	56	23	35
30 Septemb	747	245	468	349	684	722	188	47	63	25	39
31 Octobris	832	294	521	391	762	804	210	52	70	28	44
30 Novemb.	914	310	572	428	837	882	230	57	77	31	48
31 Decemb.	999	360	625	467	915	965	251	63	84	34	54

Ann. biſſ.	Ann. comm.	TABVLA VI. *Pro Menſe JANVARIO.*										
1	0	0	0	0	0	0	0	0	0	0	0	0
2	1	3	34	2	1	3	3	1	0	0	0	0
3	2	5	68	3	2	5	5	1	0	0	0	0
4	3	8	102	5	3	8	8	2	0	1	0	0
5	4	11	135	7	5	11	11	3	1	1	0	1
6	5	14	169	9	6	13	13	3	1	1	0	1
7	6	16	205	10	7	15	16	4	1	1	1	1
8	7	19	237	12	8	18	18	5	1	2	1	1
9	8	22	271	14	10	20	21	5	1	2	1	1
10	9	25	305	15	11	23	24	6	2	2	1	1
11	10	27	339	17	12	25	26	7	2	2	1	1
12	11	30	372	19	14	28	29	8	2	2	1	2
13	12	33	406	21	15	30	32	8	2	3	1	2
14	13	36	440	22	16	33	34	9	2	3	1	2
15	14	39	474	24	17	35	37	10	2	3	1	2
16	15	41	508	26	19	38	40	10	3	3	1	2
17	16	44	542	27	20	40	42	11	3	4	1	2
18	17	47	576	29	21	43	45	12	3	4	2	2
19	18	49	610	31	23	45	48	12	3	4	2	3
20	19	52	643	33	24	48	50	13	3	4	2	3
21	20	55	677	34	25	50	53	14	3	5	2	3
22	21	57	711	36	26	53	55	14	4	5	2	3
23	22	60	745	38	28	55	58	15	4	5	2	3
24	23	63	779	39	29	58	61	16	4	5	2	3
25	24	66	813	41	30	60	63	16	4	5	2	4
26	25	68	847	43	32	63	66	17	4	6	2	4
27	26	71	880	45	33	65	69	18	4	6	2	4
28	27	74	914	46	34	68	71	18	5	6	2	4
29	28	77	948	48	35	70	74	19	5	6	3	4
30	29	79	982	50	37	73	77	20	5	7	3	4
31	30	82	16	51	38	75	79	21	5	7	3	4
Febr. 1	31	85	50	53	39	78	82	21	5	7	3	5

TABVLA VII

Mediorum motuum ſolis in horis, minutis primis et ſecundis in tempore.

In horis.		A. I	A. II	A. III	A. IV	A. V	In minutis primis.				In minutis ſecundis.			
H	° ′ ″						′	″	′	″	″	″	″	″
1	0 9,856	0	1	0	0	0	1	0,164	31	5,092	1	0,003	31	0,085
2	0 19,712	0	3	0	0	0	2	0,329	32	5,256	2	0,005	32	0,088
3	0 29,569	0	4	0	0	0	3	0,493	33	5,421	3	0,008	33	0,090
4	0 39,425	0	6	0	0	0	4	0,657	34	5,585	4	0,011	34	0,093
							5	0,821	35	5,749	5	0,014	35	0,096
5	0 49,281	1	7	0	0	1	6	0,986	36	5,915	6	0,016	36	0,099
6	0 59,138	1	8	0	0	1	7	1,150	37	6,078	7	0,019	37	0,101
7	1 8,995	1	10	0	0	1	8	1,314	38	6,242	8	0,022	38	0,104
8	1 18,851	1	11	1	0	1	9	1,478	39	6,407	9	0,025	39	0,107
							10	1,643	40	6,571	10	0,027	40	0,110
9	1 28,707	1	13	1	0	1	11	1,807	41	6,736	11	0,030	41	0,112
10	1 38,564	1	14	1	0	1	12	1,971	42	6,900	12	0,033	42	0,115
11	1 48,421	1	16	1	0	1	13	2,136	43	7,064	13	0,036	43	0,118
12	1 58,277	1	17	1	0	1	14	2,300	44	7,228	14	0,038	44	0,121
							15	2,464	45	7,393	15	0,041	45	0,123
13	2 8,133	1	18	1	0	1	16	2,628	46	7,557	16	0,044	46	0,126
14	2 17,990	2	20	1	0	1	17	2,793	47	7,721	17	0,047	47	0,129
15	2 27,847	2	21	1	0	2	18	2,957	48	7,886	18	0,049	48	0,131
16	2 37,703	2	23	1	1	2	19	3,121	49	8,050	19	0,052	49	0,134
							20	3,285	50	8,214	20	0,055	50	0,137
17	2 47,559	2	24	1	1	2	21	3,450	51	8,378	21	0,058	51	0,140
18	2 57,416	2	25	1	1	2	22	3,614	52	8,542	22	0,060	52	0,142
19	3 7,272	2	27	1	1	2	23	3,778	53	8,707	23	0,063	53	0,145
20	3 17,129	2	28	1	1	2	24	3,943	54	8,871	24	0,066	54	0,148
							25	4,107	55	9,036	25	0,068	55	0,151
21	3 26,985	2	30	1	1	2	26	4,271	56	9,200	26	0,071	56	0,153
22	3 36,842	3	31	2	1	2	27	4,435	57	9,364	27	0,074	57	0,156
23	3 46,698	3	32	2	1	2	28	4,599	58	9,528	28	0,077	58	0,159
24	3 56,555	3	34	2	1	3	29	4,763	59	9,692	29	0,079	59	0,162
							30	4,928	60	9,856	30	0,082	60	0,164

TABVLA VIII.

Aequatio punctorum aequinoctialium in aſcenſione recta et in tempore.

Arg. Nod. ☾	Aequatio +	Differ.	Arg. Nod. ☾	Arg. Nod. ☾	Aequatio. +	Differ.	Arg. Nod. ☾
	″	″			″	″	
0	3,000	0,070	500	500	3,000	0,070	1000
10	3,070	0,068	90	10	2,930	0,068	90
20	3,138	0,068	80	20	2,862	0,068	80
30	3,206	0,068	70	30	2,794	0,068	70
40	3,274	0,066	60	40	2,726	0,066	60
50	3,340	0,065	50	50	2,660	0,065	50
60	3,405	0,063	40	60	2,595	0,063	40
70	3,468	0,062	30	70	2,532	0,062	30
80	3,530	0,060	20	80	2,470	0,060	20
90	3,590	0,056	10	90	2,410	0,056	10
100	3,646	0,054	400	600	2,354	0,054	900
10	3,700	0,053	90	10	2,300	0,053	90
20	3,753	0,050	80	20	2,247	0,050	80
30	3,803	0,045	70	30	2,197	0,045	70
40	3,848	0,042	60	40	2,152	0,042	60
50	3,890	0,039	50	50	2,110	0,039	50
60	3,929	0,035	40	60	2,071	0,035	40
70	3,964	0,032	30	70	2,036	0,032	30
80	3,996	0,027	20	80	2,004	0,027	20
90	4,023	0,024	10	90	1,977	0,024	10
200	4,047	0,019	300	700	1,953	0,019	800
10	4,066	0,015	90	10	1,934	0,015	90
20	4,081	0,011	80	20	1,919	0,011	80
30	4,092	0,007	70	30	1,908	0,007	70
40	4,099	0,002	60	40	1,901	0,002	60
250	4,101		250	750	1,899		750

Adde algebraice —3,″000.

TAB. IX. Pars II aequationis punctorum aequinoct. in Æ. et in tempore.

	Argumentum I.			
N.	0— 500—	100— 600—	200— 700—	N.
0	0,″000	0,″071	0,″044	100
10	0, 007	0, 073	0, 036	90
20	0, 019	0, 075	0, 027	80
30	0, 027	0, 075	0, 019	70
40	0, 036	0, 073	0, 007	60
50	0, 044	0, 071	0, 000	50
60	0, 051	0, 067	. . .	40
70	0, 057	0, 063	. . .	30
80	0, 063	0, 057	. . .	20
90	0, 069	0, 051	. . .	10
N.	900+ 400+	800+ 500+	700+ 200+	N.

TABVLA X.

Aequatio temporis ad convertendum tempus verum in tempus medium ad annum 1800, una cum variatione ſeculari.

Argumentum: Aſcenſio recta media ſolis in tempore.

Min prim.	O^{H} +	Differ.	Variat. ſecul. − +	I^{H} + −	Differ.	Variat. ſecul. +	II^{H} −	Differ.	Variat. ſecul. +
0	6 59,42	23,50	3,12	2 19,94	22,00	0,56	1 31,77	15,31	4,23
5	6 35,92	23,60	2,82	1 57,94	21,63	0,87	1 47,08	14,56	4,55
10	6 12,32	23,66	2,52	1 36,31	21,21	1,18	2 1,64	13,80	4,85
15	5 48,66	23,67	2,22	1 15,10	20,77	1,49	2 15,44	13,00	5,15
20	5 24,99	23,65	1,91	0 54,33	20,28	1,79	2 28,44	12,19	5,45
25	5 1,34	23,57	1,60	0 34,05	19,77	2,10	2 40,63	11,37	5,72
30	4 37,77	23,47	1,29	0 14,28	19,23	2,40	2 52,00	10,51	6,01
35	4 14,30	23,32	0,98	0 4,95	18,64	2,71	3 2,51	9,65	6,30
40	3 50,98	23,14	0,67	0 23,59	18,03	3,02	3 12,16	8,78	6,59
45	3 27,84	22,91	0,36	0 41,62	17,39	3,33	3 20,94	7,88	6,88
50	3 4,93	22,65	0,05	0 59,01	16,73	3,63	3 28,82	6,98	7,17
55	2 42,28	22,34	0,26	1 15,74	16,03	3,93	3 35,80	6,07	7,46
60	2 19,94		0,56	1 31,77		4,23	3 41,87		7,74

Min. prim.	III^{H} −	Differ.	Variat. ſecul. +	IV^{H} −	Differ.	Variat. ſecul. +	V^{H} ±	Differ.	Variat. ſecul. +
0	3 41,87	5,16	7,74	3 43,05	5,71	10,84	1 45,34	13,86	13,18
5	3 47,03	4,23	8,02	3 57,34	6,54	11,07	1 51,48	14,32	13,33
10	3 51,26	3,31	8,30	3 30,80	7,34	11,30	1 17,16	14,75	13,47
15	3 54,57	2,37	8,57	3 23,46	8,14	11,52	1 2,43	15,10	13,60
20	3 56,94	1,45	8,84	3 15,32	8,89	11,73	0 47,33	15,42	13,72
25	3 58,39	0,53	9,10	3 6,43	9,61	11,94	0 31,91	15,71	13,85
30	3 58,92	0,39	9,36	2 56,82	10,36	12,14	0 16,20	15,94	13,93
35	3 58,53	1,31	9,61	2 46,46	11,01	12,33	0 0,26	16,13	14,02
40	3 57,22	2,22	9,86	2 35,45	11,65	12,51	0 15,87	16,27	14,10
45	3 55,00	3,11	10,11	2 25,80	12,26	12,69	0 32,14	16,36	14,18
50	3 51,89	3,98	10,36	2 11,54	12,84	12,86	0 48,50	16,41	14,25
55	3 47,91	4,86	10,60	1 58,70	13,36	13,02	1 4,91	16,41	14,31
60	3 43,05		10,84	1 45,34		13,18	1 21,32		14,37

TABVLA X.

Aequatio temporis ad convertendum tempus verum in tempus medium ad annum 1800, una cum variatione ſeculari.

Argumentum: Aſcenſio recta media ſolis in tempore.

Min. prim.	VI^{H} +	Differ.	Variat. ſecul. +	VII^{H} +	Differ.	Variat. ſecul. +	VIII^{H} +	Differ.	Variat. ſecul. +
0	1 21,32	16,36	14,37	4 20,87	12,16	14,35	5 58,90	2,76	13,19
5	1 37,68	16,26	14,42	4 33,03	11,54	14,28	6 1,66	1,84	13,05
10	1 53,94	16,11	14,46	4 44,57	10,89	14,21	6 3,50	0,91	12,90
15	2 10,05	15,92	14,49	4 55,46	10,19	14,14	6 4,51	0,04	12,75
20	2 25,97	15,67	14,51	5 5,65	9,47	14,06	6 4,37	1,01	12,60
25	2 41,64	15,39	14,52	5 15,12	8,72	13,98	6 3,36	1,96	12,44
30	2 57,03	15,06	14,52	5 23,84	7,94	13,89	6 1,40	2,92	12,28
35	3 12,09	14,69	14,52	5 31,78	7,13	13,79	5 58,48	3,89	12,11
40	3 26,78	14,26	14,51	5 38,91	6,30	13,69	5 54,59	4,86	11,94
45	3 41,04	13,79	14,49	5 45,21	5,45	13,58	5 49,73	5,83	11,77
50	3 54,83	13,29	14,46	5 50,66	4,57	13,46	5 43,90	6,79	11,60
55	4 8,12	12,75	14,41	5 55,23	3,67	13,33	5 37,11	7,74	11,42
60	4 20,87		14,35	5 58,90		13,19	5 29,37		11,24

Min. prim.	IX^{H} +	Differ.	Variat. ſecul. +	X^{H} ±	Differ.	Variat. ſecul. +	XI^{H} −	Differ.	Variat. ſecul. +
0	5 29,37	8,70	11,24	2 46,21	18,91	8,92	1 40,66	25,33	6,36
5	5 20,67	9,63	11,06	2 27,30	19,61	8,71	2 5,99	25,64	6,14
10	5 11,04	10,56	10,88	2 7,69	20,29	8,50	2 31,63	25,90	5,92
15	5 0,48	11,48	10,69	1 47,40	20,94	8,29	2 57,53	26,14	5,70
20	4 49,00	12,39	10,50	1 26,46	21,56	8,08	3 23,67	26,33	5,48
25	4 36,61	13,27	10,31	1 5,90	22,15	7,87	3 50,00	26,48	5,25
30	4 23,34	14,13	10,12	0 42,75	22,71	7,65	4 16,48	26,60	5,02
35	4 9,21	14,99	9,92	0 20,04	23,23	7,44	4 43,08	26,67	4,79
40	3 54,22	15,82	9,72	0 3,19	23,72	7,23	5 9,75	26,70	4,56
45	3 38,40	16,62	9,52	0 26,91	24,18	7,02	5 36,45	26,69	4,33
50	3 21,78	17,40	9,32	0 51,09	24,59	6,80	6 3,14	26,64	4,10
55	3 4,38	18,17	8,12	1 15,68	24,98	6,58	6 29,78	26,54	3,87
60	2 46,21		8,92	1 40,66		6,36	6 56,32		3,64

TABVLA X.

Aequatio temporis ad convertendum tempus verum in tempus medium ad annum 1800, una cum variatione seculari.

Argumentum: Ascensio recta media solis in tempore.

Min. prim.	XII^{H} —	Differ.	Variat. secul. +	XIII^{H} —	Differ.	Variat. secul. ±	XIV^{H} —	Differ.	Variat. secul. —
0	6 56,32	26,41	3,64	11 52,58	21,53	0,71	15 17,85	10,97	2,50
5	7 22,73	26,24	3,40	12 13,91	20,86	0,45	15 28,82	9,86	2,78
10	7 48,97	26,02	3,16	12 34,77	20,14	0,19	15 38,68	8,75	3,06
15	8 14,99	25,75	2,92	12 54,91	19,39	0,07	15 47,41	7,57	3,34
20	8 40,74	25,45	2,68	13 14,30	18,60	0,33	15 54,98	6,38	3,62
25	9 6,19	25,11	2,44	13 32,90	17,78	0,59	16 1,36	5,17	3,91
30	9 31,30	24,72	2,20	13 50,68	16,90	0,86	16 6,53	3,93	4,20
35	9 56,02	24,29	1,96	14 7,58	16,00	1,13	16 10,46	2,67	4,49
40	10 20,31	23,83	1,71	14 23,58	15,06	1,40	16 13,13	1,39	4,78
45	10 44,14	23,31	1,46	14 38,64	14,09	1,67	16 14,52	0,09	5,07
50	11 7,46	22,76	1,21	14 52,73	13,08	1,94	16 14,61	1,22	5,36
55	11 30,21	22,17	0,96	15 5,81	12,04	2,22	16 13,39	2,55	5,65
60	11 52,38		0,71	15 17,85		2,50	16 10,84		5,94

Min. prim.	XV^{H} —	Differ.	Variat. secul. —	XVI^{H} —	Differ.	Variat. secul. —	XVII^{H} —	Differ.	Variat. secul. —
0	16 10,84	3,88	5,94	13 54,58	20,04	9,50	8 37,45	32,94	12,69
5	16 6,96	5,24	6,24	13 34,54	21,31	9,79	8 4,51	33,72	12,92
10	16 1,72	6,60	6,54	13 13,23	22,55	10,07	7 30,79	34,45	13,14
15	15 55,12	7,97	6,84	12 50,68	23,76	10,35	6 56,36	35,09	13,35
20	15 47,15	9,33	7,14	12 26,92	24,95	10,63	6 21,27	35,68	13,56
25	15 37,82	10,69	7,44	12 1,97	26,10	10,90	5 45,59	36,22	13,76
30	15 27,13	12,06	7,74	11 35,87	27,21	11,17	5 9,37	36,68	13,95
35	15 15,07	13 42	8,04	11 8,66	28,28	11,44	4 32,68	37,08	14,14
40	15 1,65	14,77	8,34	10 40,38	29,31	11,70	3 55,60	37,42	14,32
45	14 46,88	16,11	8,63	10 11,07	30,29	11,96	3 18,18	37,69	14,49
50	14 30,77	17,44	8,92	9 40,78	31,22	12,21	2 40,49	37,88	14,65
55	14 13,33	18,75	9,21	9 9,56	32,11	12,45	2 2,61	38,01	14,79
60	13 54,58		9,50	8 37,45		12,69	1 24,60		14,92

TABVLA X.

Aequatio temporis ad convertendum tempus verum in tempus medium ad annum 1800, una cum variatione seculari.

Argumentum: Ascensio recta media solis in tempore.

Min. prim.	XVIII^{H} − +	Differ.	Variat. secul. −	XIX^{H} +	Differ.	Variat. secul. +	XX^{H} +	Differ.	Variat. secul. +
	′ ″	″	″	′ ″	″	″	′ ″	″	″
0	1 24,60	38,07	14,92	5 56,40	33,49	15,73	11 35,90	21,11	14,98
5	0 46,53	38,06	16,04	6 29,89	32,70	15,74	11 57,01	19,86	14,86
10	0 8,47	37,98	15,15	7 2,59	31,86	15,72	12 16,87	18,59	14,73
15	0 29,51	37,82	15,25	7 34,45	30,97	15,69	12 35,46	17,31	14,59
20	1 7,33	37,61	15,35	8 5,42	30,03	15,65	12 52,77	16,01	14,44
25	1 44,93	37,31	15,44	8 35,45	29,06	15,60	13 8,78	14,69	14,28
30	2 22,25	36,96	15,52	9 4,50	28,02	15,54	13 23,47	13,38	14,10
35	2 59,21	36,54	15,59	9 32,52	26,95	15,47	13 36,85	12,05	13,92
40	3 35,75	36,05	15,64	9 59,47	25,85	15,39	13 48,90	10,73	13,73
45	4 11,80	35,50	15,68	10 25,32	24,72	15,30	13 59,63	9,40	13,54
50	4 47,30	34,89	15,71	10 50,04	23,53	15,20	14 9,03	8,08	13,35
55	5 22,19	35,21	15,73	11 13,57	22,33	15,09	14 17,11	6,75	13,15
60	5 56,40		15,73	11 35,90		14,98	14 23,86		12,95

Min. prim.	XXI^{H} +	Differ.	Variat. secul. −	XXII^{H} +	Differ.	Variat. secul. −	XXIII^{H} +	Differ.	Variat. secul. −
	′ ″	″	″	′ ″	″	″	′ ″	″	″
0	14 23,86	5,45	12,95	14 6,92	8,96	10,06	11 18,60	19,08	6,70
5	14 29,31	4,14	12,74	13 57,96	9,99	9,79	10 59,52	19,67	6,41
10	14 33,45	2,85	12,52	13 47,97	11,00	9,52	10 39,85	20,12	6,12
15	14 36,30	1,58	12,30	13 36,97	11,96	9,25	10 9,63	20,74	5,85
20	14 37,88	0,32	12,07	13 25,01	12,90	8,98	9 58,89	21,22	5,55
25	14 38,20	0,92	11,83	13 12,11	13,81	8,70	9 37,67	21,64	5,25
30	14 37,28	2,14	11,59	12 58,30	14,67	8,42	9 16,03	22,04	4,93
35	14 35,14	3,35	11,35	12 43,63	15,50	8,14	8 53,99	22,38	4,65
40	14 31,79	4,52	11,10	12 28,13	16,29	7,86	8 31,61	22,70	4,35
45	14 27,27	5,67	10,85	12 11,84	17,05	7,58	8 8,91	22,95	4,05
50	14 21,60	6,79	10,59	11 54,79	17,76	7,29	7 45,96	23,18	3,73
55	14 14,81	7,89	10,33	11 37,03	18,45	7,00	7 22,78	23,36	3,43
60	14 6,92		10,06	11 18,60		6,70	6 59,42		3,12

TABVLA XI.

Aequationes minores ex planetarum perturbationibus in aequationem temporis genitae.

Arg.	II	III	IV	V	VI	VII	VIII	IX	X	XI	Arg.
0	1,″00	1,″00	1,″00	1,″00	1,″00	1,″19	1,″14	1,″01	1,″02	1,″13	0
50	1, 15	0, 82	0, 89	0, 96	1, 00	1, 19	1, 17	0, 96	1, 02	1, 12	50
100	1, 29	0, 77	0, 82	0, 89	0, 99	1, 16	1, 17	0, 91	1, 01	1, 10	100
150	1, 41	0, 88	0, 82	0, 78	0, 98	1, 12	1, 14	0, 87	1, 01	1, 08	150
200	1, 48	1, 14	0, 88	0, 65	0, 98	1, 07	1, 10	0, 84	1, 00	1, 04	200
250	1, 50	1, 43	0, 98	0, 53	0, 97	1, 01	1, 05	0, 85	1, 00	1, 01	250
300	1, 48	1, 64	1, 08	0, 45	0, 97	0, 95	1, 02	0, 84	0, 99	0, 97	300
350	1, 41	1, 70	1, 15	0, 45	0, 97	0, 90	0, 99	0, 86	0, 99	0, 94	350
400	1, 29	1, 58	1, 15	0, 56	0, 98	0, 85	0, 97	0, 89	0, 99	0, 91	400
450	1, 15	1, 33	1, 10	0, 75	0, 99	0, 82	0, 96	0, 94	0, 98	0, 88	450
500	1, 00	1, 00	1, 00	1, 00	1, 00	0, 81	0, 94	0, 99	0, 98	0, 87	500
550	0, 85	0, 67	0, 90	1, 25	1, 01	0, 81	0, 92	1, 04	0, 98	0, 88	550
600	0, 71	0, 42	0, 85	1, 44	1, 02	0, 84	0, 89	1, 09	0, 99	0, 90	600
650	0, 59	0, 30	0, 85	1, 55	1, 03	0, 88	0, 87	1, 13	0, 99	0, 92	650
700	0, 52	0, 36	0, 92	1, 55	1, 03	0, 93	0, 85	1, 16	1, 00	0, 96	700
750	0, 50	0, 57	1, 02	1, 47	1, 03	0, 99	0, 86	1, 17	1, 00	0, 99	750
800	0, 52	0, 86	1, 12	1, 35	1, 02	1, 05	0, 89	1, 16	1, 01	1, 03	800
850	0, 59	1, 12	1, 18	1, 22	1, 02	1, 10	0, 94	1, 14	1, 01	1, 06	850
900	0, 71	1, 23	1, 18	1, 11	1, 01	1, 15	1, 02	1, 11	1, 01	1, 09	900
950	0, 85	1, 18	1, 11	1, 04	1, 00	1, 18	1, 09	1, 06	1, 02	1, 12	950
1000	1, 00	1, 00	1, 00	1, 00	1, 00	1, 19	1, 14	1, 01	1, 02	1, 13	1000

Arg.	XII	XIII	XIV	XV	XVI	XVII	XVIII	☊	XX	Arg.	Praec.
0	0, 98	1, 03	1, 02	1, 03	1, 02	1, 09	1, 01	1, 00	1, 00	0	
25	0, 99	1, 00	1, 01	1, 01	1, 02	1, 07	1, 02	1, 03	1, 04	50	
100	0, 99	0, 98	1, 00	1, 00	1, 02	1, 04	1, 03	1, 06	1, 07	100	
150	0, 99	0, 96	0, 99	0, 98	1, 01	1, 01	1, 03	1, 08	1, 10	150	
200	1, 00	0, 94	0, 98	0, 97	1, 01	0, 98	1, 04	1, 09	1, 11	200	
250	1, 00	0, 93	0, 97	0, 96	1, 01	0, 95	1, 04	1, 10	1, 12	250	
300	1, 00	0, 92	0, 97	0, 95	1, 00	0, 92	1, 03	1, 09	1, 11	300	
350	1, 01	0, 92	0, 97	0, 95	1, 00	0, 90	1, 02	1, 08	1, 10	350	
400	1, 01	0, 93	0, 97	0, 96	0, 99	0, 89	1, 02	1, 06	1, 07	400	
450	1, 02	0, 95	0, 97	0, 96	0, 99	0, 89	1, 00	1, 03	1, 04	450	
500	1, 02	0, 97	0, 98	0, 97	0, 98	0, 91	0, 99	1, 00	1, 00	500	
550	1, 01	1, 00	0, 99	0, 99	0, 98	0, 93	0, 98	0, 97	0, 96	550	
600	1, 01	1, 02	1, 00	1, 00	0, 98	0, 96	0, 97	0, 94	0, 93	600	
650	1, 01	1, 04	1, 01	1, 02	0, 99	0, 99	0, 97	0, 92	0, 90	650	
700	1, 00	1, 06	1, 02	1, 03	0, 99	1, 02	0, 96	0, 91	0, 89	700	
750	1, 00	1, 07	1, 03	1, 04	0, 99	1, 05	0, 96	0, 90	0, 88	750	
800	1 00	1, 08	1, 03	1, 05	1, 00	1, 08	0, 97	0, 91	0, 89	800	
850	0, 99	1, 08	1, 03	1, 05	1, 00	1, 10	0, 98	0, 92	0, 90	850	
900	0, 99	1, 07	1, 03	1, 04	1, 01	1, 11	0, 98	0, 94	0, 93	900	
950	0, 98	1, 05	1, 03	1, 04	1, 01	1, 11	1, 00	0, 97	0, 96	950	
1000	0, 98	1, 03	1, 02	1, 03	1, 02	1, 09	1, 01	1, 00	1, 00	1000	

Summae omnium harum aequationum positiv. adde semper algebraice constantem — 19,″0.

TABVLA XII.

Obliquitas Eclipticae media pro die 1 Januarii computata.

Anni	Obl. Eclipt. med.	Anni	Obl. Eclipt. med.
	° ' "		° ' "
1740	23 28 27,91	1803	23 27 55,09
1760	23 28 17,49	1804	23 27 54,57
1780	23 28 7,07	1805	23 27 54,05
1790	23 28 1,86	1806	23 27 53,53
1791	23 28 1,34	1807	23 27 53,01
1792	23 28 0,82	1808	23 27 52,49
1793	23 28 0,30	1809	23 27 51,97
1794	23 27 59,78	1810	23 27 51,45
1795	23 27 59,26	1811	23 27 50,93
1796	23 27 58,74	1812	23 27 50,41
1797	23 27 58,22	1813	23 27 49,89
1798	23 27 57,70	1814	23 27 49,37
1799	23 27 57,18	1820	23 27 46,25
1800	23 27 56,65	1830	23 27 41,04
1801	23 27 56,13	1840	23 27 35,82
1802	23 27 55,61	1850	23 27 30,60

TABVLA XIII

pro Obliq. Eclipticae Nutatio. Pars I

N.	Arg. ☊ 0 (+ 500 −)	100 (+ 600 −)	200 (+ 700 −)	N.
	"	"	"	
0	9,55	7,73	2,95	100
10	9,53	7,36	2,38	90
20	9,48	6,96	1,79	80
30	9,38	6,54	1,20	70
40	9,25	6,09	0,60	60
50	9,08	5,61	0,00	50
60	8,88	5,12	. . .	40
70	8,64	4,60	. . .	30
80	8,37	4,07	. . .	20
90	8,06	3,52	. . .	10
100	7,73	2,95	. . .	0
N.	+ 900 − 400	+ 800 − 300	+ 700 − 200	N.

TABVLA. XIV

pro Obliq. Elipticae Nutatio. Pars II.

Arg. Longitudo ☉					Aequat.	Arg. Longitudo ☉.				
+ O^s	+ VI^s	°	− III^s	− IX^s	"	− III^s	− IX^s	°	+ VI^s	+ XII^s
		5			0,427			25		
		10			0,408			20		
		15			0,376			15		
		20			0,332			10		
		25			0,279			5		
I	VII	0	IV	X	0,217	II	VIII	0	V	XI
		5			0,148			25		
		10			0,075			20		
I	VII	15	IV	X	0,000	I	VII	15	IV	X

TABVLA XV.

Acceleratio fixarum in tempore ſolari medio.

Dies.				Horae temp. prim. mob.			Minuta prima temp. prim. mob.				Minuta ſecunda temp. prim. mob.			
D	H	'	"	H	'	"	'	"	'	"	"	"	"	"
1	0	3	55,908	1	0	9,829	1	0,164	31	5,079	1	0,003	31	0,085
2	0	7	51,816	2	0	19,659	2	0,328	32	5,242	2	0,005	32	0,087
3	0	11	47,724	3	0	29,488	3	0,491	33	5,406	3	0,008	33	0,090
4	0	15	43,632	4	0	39,318	4	0,655	34	5,570	4	0,011	34	0,093
5	0	19	39,540				5	0,819	35	5,734	5	0,014	35	0,096
6	0	23	35,448	5	0	49,147	6	0,983	36	5,898	6	0,016	36	0,098
7	0	27	31,356	6	0	58,977	7	1,147	37	6,062	7	0,019	37	0,101
8	0	31	27,264	7	1	8,806	8	1,311	38	6,225	8	0,022	38	0,104
9	0	35	23,172	8	1	18,636	9	1,474	39	6,389	9	0,025	39	0,106
10	0	39	19,080				10	1,636	40	6,553	10	0,027	40	0,109
11	0	43	14,988	9	1	28,465	11	1,802	41	6,717	11	0,030	41	0,112
12	0	47	10,896	10	1	38,295	12	1,966	42	6,881	12	0,032	42	0,115
13	0	51	6,804	11	1	48,124	13	2,130	43	7,044	13	0,036	43	0,117
14	0	55	2,712	12	1	57,954	14	2,294	44	7,208	14	0,038	44	0,120
15	0	58	58,620				15	2,457	45	7,372	15	0,041	45	0,123
16	1	2	54,528	13	2	7,783	16	2,621	46	7,536	16	0,044	46	0,126
17	1	6	50,436	14	2	17,613	17	2,785	47	7,699	17	0,046	47	0,128
18	1	10	46,344	15	2	27,442	18	2,949	48	7,864	18	0,049	48	0,131
19	1	14	42,252	16	2	37,272	19	3,113	49	8,027	19	0,052	49	0,134
20	1	18	38,160				20	3,277	50	8,191	20	0,055	50	0,137
21	1	22	34,068	17	2	47,101	21	3,440	51	8,355	21	0,057	51	0,139
22	1	26	29,976	18	2	56,931	22	3,604	52	8,519	22	0,060	52	0,142
23	1	30	25,884	19	3	6,760	23	3,768	53	8,683	23	0,063	53	0,145
24	1	34	21,792	20	3	16,590	24	3,932	54	8,846	24	0,066	54	0,147
25	1	38	17,700				25	4,096	55	9,010	25	0,068	55	0,150
26	1	42	13,608	21	3	26,419	26	4,259	56	9,174	26	0,071	56	0,153
27	1	46	9,516	22	3	36,249	27	4,423	57	9,338	27	0,074	57	0,156
28	1	50	5,424	23	3	46,078	28	4,587	58	9,502	28	0,076	58	0,158
29	1	54	1,332	24	3	55,908	29	4,751	59	9,666	29	0,079	59	0,161
30	1	57	57,240				30	4,915	60	9,829	30	0,082	60	0,164
31	2	1	53,148											

TABVLA XVI.

pro converſione temporis primi mobilis in partes aequatoris.

Horae.	Gradus.	Minuta prima.			Minuta ſecunda.			Decimae / Centeſimae / Milleſimae	
m	°	′	° ′	″	″	° ′	″	″	″
1	15	1	0 15	51	1	0 15	31 7 45	0,1	1,5
2	30	2	0 30	52	2	0 30	32 8 0	0,2	3,0
3	45	3	0 45	53	3	0 45	33 8 15	0,3	4,5
4	60	4	1 0	54	4	1 0	34 8 30	0,4	6,0
		5	1 15	55	5	1 15	35 8 45	0,5	7,5
		6	1 30	56	6	1 30	36 9 0	0,6	9,0
5	75	7	1 45	57	7	1 45	37 9 15	0,7	10,5
6	90	8	2 0	58	8	2 0	38 9 30	0,8	12,0
7	105	9	2 15	59	9	2 15	39 9 45	0,9	13,5
8	120	10	2 30	40	10	2 30	40 10 0	1,0	15,0
		11	2 45	41	11	2 45	41 10 15	0,01	0,15
9	135	12	3 0	42	12	3 0	42 10 30	0,02	0,30
10	150	13	3 15	43	13	3 15	43 10 45	0,03	0,45
11	165	14	3 30	44	14	3 30	44 11 0	0,04	0,60
12	180	15	3 45	45	15	3 45	45 11 15	0,05	0,75
		16	4 0	46	16	4 0	46 11 30	0,06	0,90
13	195	17	4 15	47	17	4 15	47 11 45	0,07	1,05
14	210	18	4 30	48	18	4 30	48 12 0	0,08	1,20
15	225	19	4 45	49	19	4 45	49 12 15	0,09	1,35
16	240	20	5 0	50	20	5 0	50 12 30	0,10	1,50
		21	5 15	51	21	5 15	51 12 45	0,001	0,015
17	255	22	5 30	52	22	5 30	52 13 0	0,002	0,030
18	270	23	5 45	53	23	5 45	53 13 15	0,003	0,045
19	285	24	6 0	54	24	6 0	54 13 30	0,004	0,060
20	300	25	6 15	55	25	6 15	55 13 45	0,005	0,075
		26	6 30	56	26	6 30	56 14 0	0,006	0,090
21	315	27	6 45	57	27	6 45	57 14 15	0,007	0,105
22	330	28	7 0	58	28	7 0	58 14 30	0,008	0,120
23	345	29	7 15	59	29	7 15	59 14 45	0,009	0,135
24	360	30	7 30	60	30	7 30	60 15 0	0,010	0,150

TABVLA XVII

pro converſione partium aequatoris in tempus primi mobilis.

Sign.	Grad.	Hor.	Minuta prima.			Minuta ſecunda.			Decimae / Centeſimae / Milleſimae	
♈	°	h	′	h ′ ″	′	″	″	′	″	″
1	30	2	1	0 4	31	2 4	1	0,0667	31	2,0667	0,1	0,0067
2	60	4	2	0 8	32	2 8	2	0,1333	32	2,1333	0,2	0,0133
3	90	6	3	0 12	33	2 12	3	0,2000	33	2,2000	0,3	0,0200
4	120	8	4	0 16	34	2 16	4	0,2667	34	2,2667	0,4	0,0267
5	150	10	5	0 20	35	2 20	5	0,3333	35	2,3333	0,5	0,0333
6	180	12										
7	210	14										
8	240	16	6	0 24	36	2 24	6	0,4000	36	2,4000	0,6	0,0400
9	270	18	7	0 28	37	2 28	7	0,4667	37	2,4667	0,7	0,0467
10	300	20	8	0 32	38	2 32	8	0,5333	38	2,5333	0,8	0,0533
11	330	22	9	0 36	39	2 36	9	0,6000	39	2,6000	0,9	0,0600
°	h	′	10	0 40	40	2 40	10	0,6667	40	2,6667	1,0	0,0667
1	0	4										
2	0	8										
3	0	12										
4	0	16	11	0 44	41	2 44	11	0,7333	41	2,7333	0,01	0,0007
5	0	20	12	0 48	42	2 48	12	0,8000	42	2,8000	0,02	0,0013
6	0	24	13	0 52	43	2 52	13	0,8667	43	2,8667	0,03	0,0020
7	0	28	14	0 56	44	2 56	14	0,9333	44	2,9333	0,04	0,0027
8	0	32	15	1 0	45	3 0	15	1,0000	45	3,0000	0,05	0,0033
9	0	36										
10	0	40										
11	0	44	16	1 4	46	3 4	16	1,0667	46	3,0667	0,06	0,0040
12	0	48	17	1 8	47	3 8	17	1,1333	47	3,1333	0,07	0,0047
13	0	52	18	1 12	48	3 12	18	1,2000	48	3,2000	0,08	0,0053
14	0	56	19	1 16	49	3 16	19	1,2667	49	3,2667	0,09	0,0060
15	1	0	20	1 20	50	3 20	20	1,3333	50	3,3333	0,10	0,0067
16	1	4										
17	1	8										
18	1	12	21	1 24	51	3 24	21	1,4000	51	3,4000	0,001	0,0001
19	1	16	22	1 28	52	3 28	22	1,4667	52	3,4667	0,002	0,0001
20	1	20	23	1 32	53	3 32	23	1,5333	53	3,5333	0,003	0,0002
21	1	24	24	1 36	54	3 36	24	1,6000	54	3,6000	0,004	0,0003
22	1	28	25	1 40	55	3 40	25	1,6667	55	3,6667	0,005	0,0003
23	1	32										
24	1	36										
25	1	40	26	1 44	56	3 44	26	1,7333	56	3,7333	0,006	0,0004
26	1	44	27	1 48	57	3 48	27	1,8000	57	3,8000	0,007	0,0005
27	1	48	28	1 52	58	3 52	28	1,8667	58	3,8667	0,008	0,0005
28	1	52	29	1 56	59	3 56	29	1,9333	59	3,9333	0,009	0,0006
29	1	56	30	2 0	60	4 0	30	2,0000	60	4,0000	0,010	0,0007
30	2	0										

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15. Linea 35 loco imminutionum lege *imminutionem.*

30. Differ. inter 89° 24' et 89° 25', 386", 0 lege 386",5.

84. Lin. 20 loco utut lege *ut.*

— — — poſt *tabula* adde comma.

36. — 21. 23° 27' 23" lege 23° 28' 23"

— — 23. 23 27 23 — 23 28 23

43. — 23. loco proprios — *proprii.*

— — 24. — cognitos — *cogniti.*

59. — 15. Poſt *ut* adde *cum.*

65. 66. 67. In tabulis motus proprii fixarum in declin. pag. 65 et 66 in columna VI, pag. 67 in col. V, VI, VII ſigna convertenda ſunt in contraria harum ſtellarum: Rigel, Caſtor, Procyon, Pollux, Regulus, β Leon. β Virg. Arcturus, Gemma, α Serpent. α Hercul. α Ophiuch. α^2 et α^2 Capricorn. α Aquarii et Fomahand.

66. Decl. med. α ≈ ſec. Cl. *Piazzi* lege 1° 17' 4,"65.

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— Motus propr. in 44 annis — 0", 18265.

67. Motus prop. ann. α ≈ ex compar. decl. Cl. *Mayeri* et *Piazzi* lege — 0,"00415.

71. Lin. 23 deleatur *determinandi.*

83. Lin. ultim. loco [— 19,"41855 coſ (AR* — ⊙) 0,"836454 etc. lege:
[— 19,"41855 coſ (AR* — ⊙) — 0"836454 etc.

— — 10. loco e declin. lege *a declin.*

173. — 12. — CXVI — CXVII.

181. Arg. XX. 872 lege 372.

182. Linea 30 tempore medio nondum cognito, lege: *temporis medii nondum cogniti.*

183. — 2 tabula lege *tabulae.*

185. — 9 poſt *itaque* adde *eum.*

186. — 8 poſt *et* adde *cum.*

192. — 24 redactos lege *redacti.*

200. Lin. ultim. diverſa — *diverſum.*

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— Deneb. — — — — — 0,"23 — 0,"13.

VII. Aberr. α Hydrae. Long. ☉ 12ˢ 0°; 0",949 — 2,"949.

XVI. Loco Aberr. et Nutat. in tempore lege in *ſpatio*.

XXXII. Praec. ann. 3,"251 lege 3,"241.

XXXIV. No. 97. ξ lege ζ.

XXXIX. — 282. κ — k.

LX. — 318. ο — o.

XLI. — 348. Diſt. a polo 71° 8' lege 71° 6'.

XLIII. — 447. AR. in tempore 6ʰ 50' 46,"27 lege 6ʰ 50' 46,"94

— — — ſpatio 102° 41' 34,"11 — 102° 41' 44,"11

— — Differ. cum *Piazzi* . . — 7,"1 — — 17,"1

XLIX. — 655. Diſt. a polo 87° 40' . . . . — 77° 40'

— — 681. Deleatur num. *Flamſteed.* 38.

LI. — 739. Diſt. a polo 72° 28' . . . . — 71° 28'

LII. — 788. — — — 74° 39' . . . . — 74° 19'

LIV. — 851. 19 *q* lege 21 *q*.

— — 876. Diſt. a polo 95° 20' . . . . — 85° 20'

LV. — 886. — — — 81° 0' . . . . — 81° 6'

— — 899. — — — 74° 53' . . . . — 105° 7'

— — 902. AR. 13ʰ 2' 30,"29 lege 13ʰ 3' 30,"29.

— — 907. AR. 13 5 51, 21 — 13 6 51, 21.

LVI. — 960. Deleatur num. *Flamſteed.* 91.

LXXXII. — 6. Diff. cum *Piazzi* — 21,"0 lege — 20,"7.

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II. α Orion. Diff. cum catal. 1790, — 0,"21 lege 0,"15.

— Deneb. — — — — — 0,"23 — 0,"13.

VII. Aberr. α Hydrae. Long. ☉ 12ʰ 0'; 0",949 — 2,"949.

XVI. Loco Aberr. et Nutat. in tempore lege in *spatio*.

XXXII. Praec. ann. 3,"251 lege 3,"241.

XXXIV. No. 97. ξ lege ζ.

XXXIX. — 282. κ — k.

LX. — 318. ι — o.

XLI. — 348. Dist. a polo 71° 8' lege 71° 6'.

XLIII. — 447. AR. in tempore 6ʰ 50' 46,"27 lege 6ʰ 50' 45,"94

— — — spatio 102° 41' 34,"11 — 102° 41' 44,"11

— — Differ. cum *Piazzi* . . — 7,"1 — — 17,"1

XLIX. — 655. Dist. a polo 87° 40' . . . . . — 77° 40'

— — 661. Deleatur num. *Flamsteed.* 38.

LI. — 739. Dist. a polo 72° 28' . . . . . — 71° 28'

LII. — 788. — — — 74° 39' . . . . . — 74° 19'

LIV. — 851. 19 *q* lege 21 *q*.

— — 876. Dist. a polo 95° 20' . . . . . — 85° 20'

LV. — 886. — — — 81° 0' . . . . . — 81° 6'

— — 899. — — — 74° 53' . . . . . — 105° 7'

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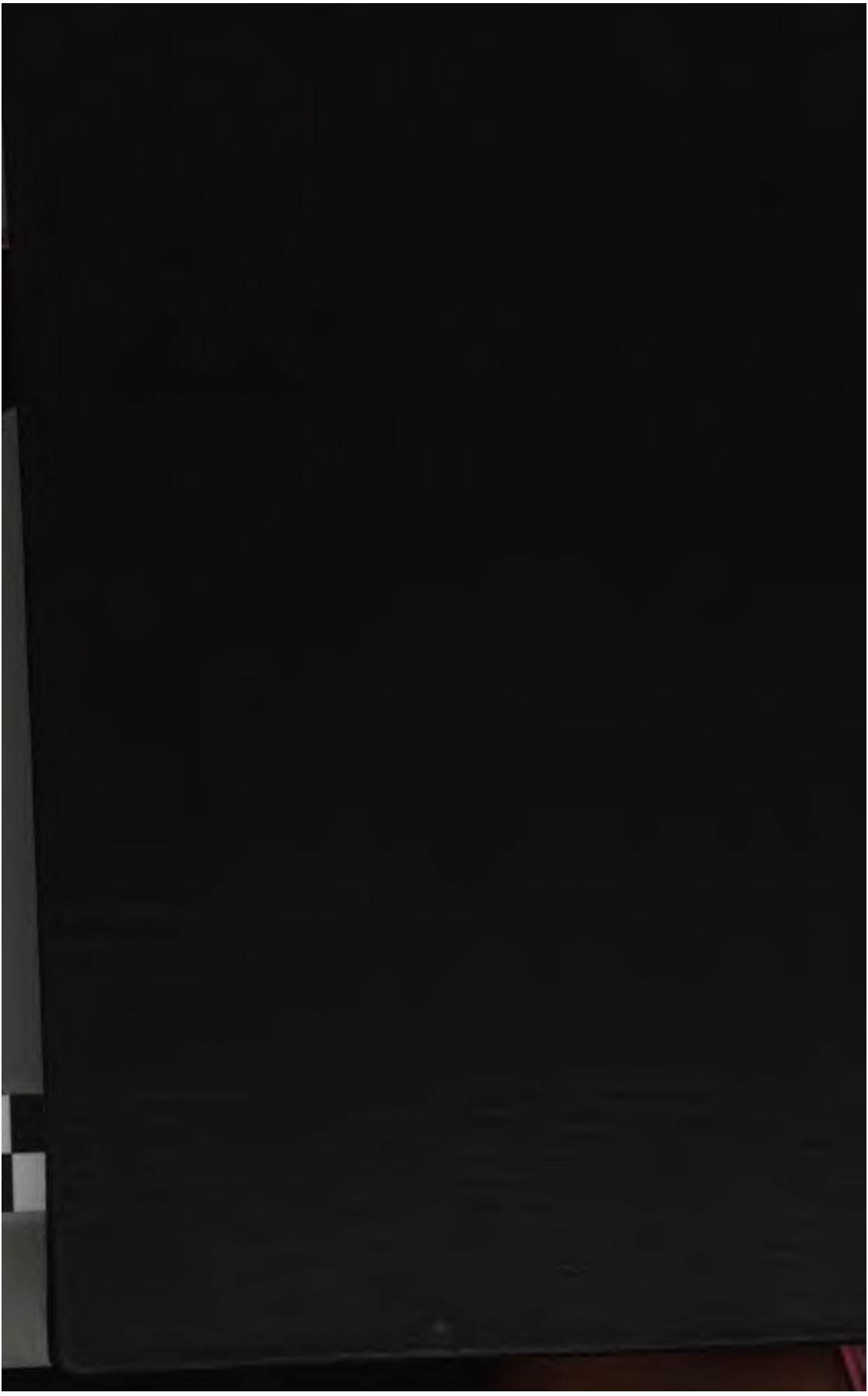
— — 907. AR. 13 5 51, 21 — 13 6 51, 21.

LVI. — 960. Deleatur num. *Flamsteed.* 91.

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